(Prototype) LST T-110 Argo ST-01 "Sabretooth" transport aircraft

Entry

This is the LST T-110 Argo ST-01 "Sabretooth" project. The name perfectly captures the machine's character: predatory, short range, powerful impact (TP400 engines), and "fangs" in the form of a titanium capsule.
Project Description
The LST T-110 Szablozęb (Sabretooth) is a highly maneuverable, light STOL (Short Takeoff and Landing) transport aircraft designed to transport 7-10 tons of cargo directly into combat zones where standard transports are too large or too fragile.

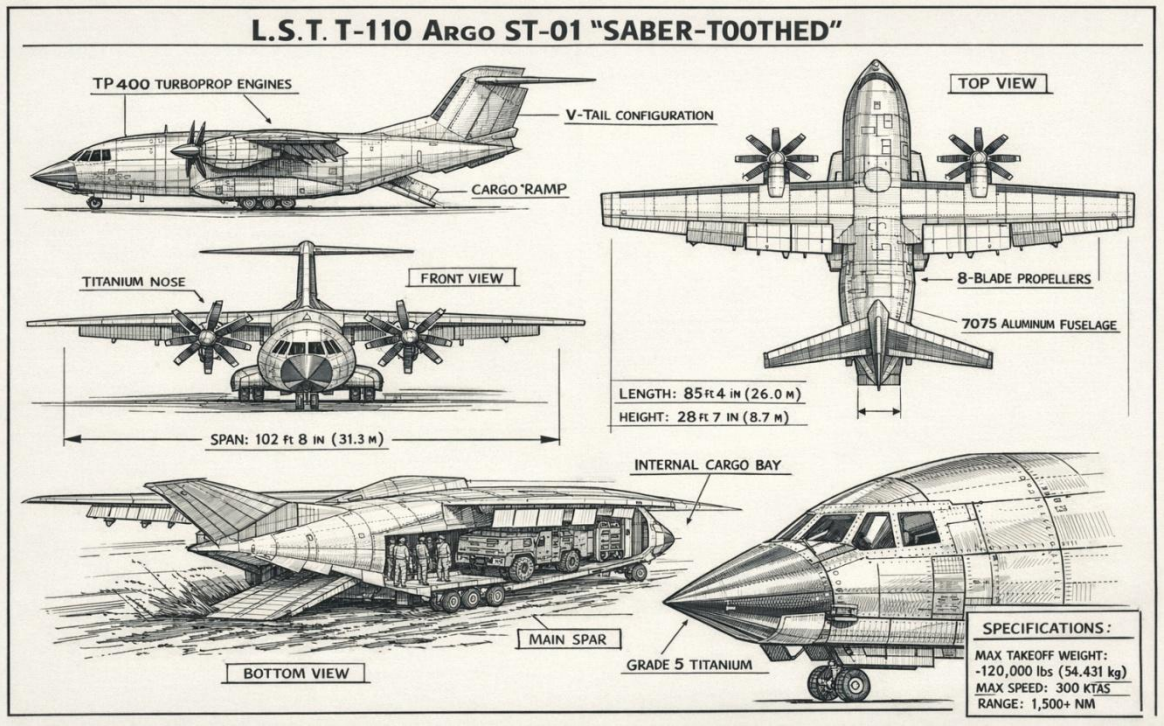
General Construction (Engineering Architecture)

1. Hull: "Armored Box"
Structure: Semi-monocoque, supported by 7075 Aluminum frames.
Nose (Sabertooth Capsule): Made of Grade 5 Titanium, this autonomous module protects a crew of two or three. The distinctive, sharp nose profile (hence the name) improves downward visibility at a 15° angle, crucial for landing on unprepared forest tracks.
Cargo bay: Completely flat floor with rails for quick lashing of Argo vehicles. Side walls have integrated anchor points that are part of the main load-bearing structure.

2. Lift System: "Shoulder High-Wing"
Wings: Straight, high-chord (wide), mounted on top of the fuselage. They provide enormous lift at low speeds.
Spar: The main wing-supporting member, made of Titanium, passes through the upper fuselage, forming the "backbone" of the aircraft.
Propulsion: Two TP400-D6 turboprop engines, each driving an 8-blade composite propeller. The engines are spaced wide apart to allow the propeller slipstream to bypass the fuselage, reducing internal vibration and noise.

3. Tail: "Sabertooth V-Tail"
Construction: Butterfly (V-Tail) made of carbon composites.

Advantage: The lack of a classic vertical tail allows vehicles to freely approach the rear ramp without the risk of damage to the tail by antennas or high bodies.



4. Chassis: "Active Stiff-Extender"
Legs (Titanium/300M Steel): Three-leg, with dual low-pressure wheels.
Kneeling System: Cylinders allow the rear of the aircraft to be lowered by 20 cm, allowing the ramp to touch the ground at an angle of just 10 degrees – ideal for low-slung vehicles.
Operational Characteristics
Task: "Jump in, throw out, run."
Protection: Key systems (fuel, electronics, crew) are protected by titanium shields. The rest of the skin is "soft" (aluminum), making it easier to patch bullet holes in the field.

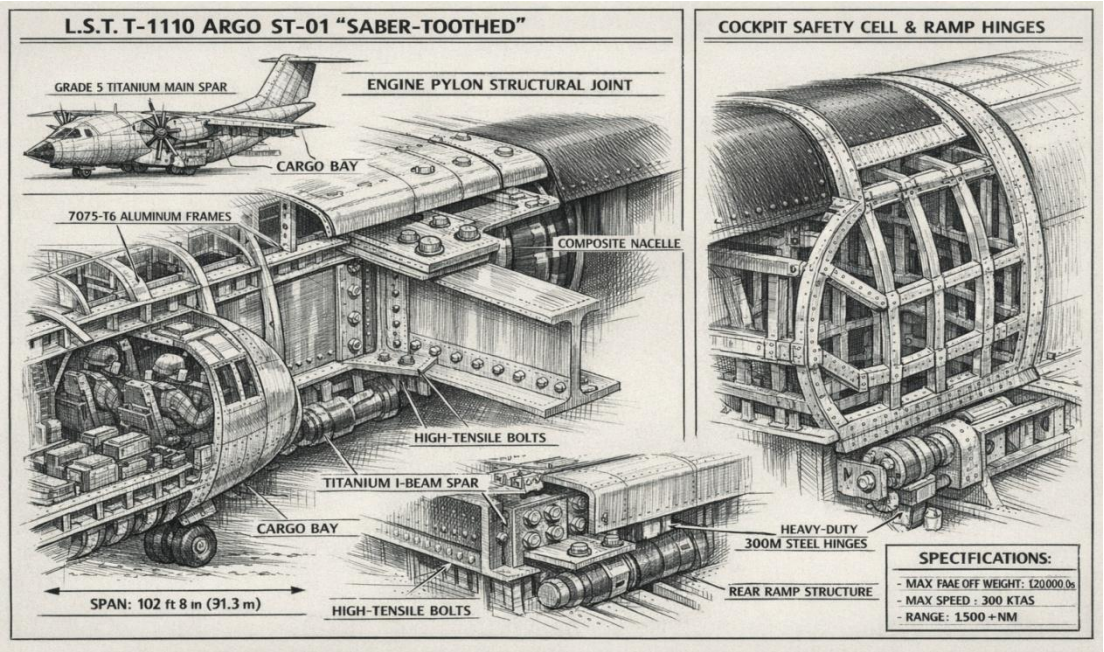
Structural arrangement

Now that we have the silhouette and what the "Sabretooth" is supposed to carry, we move on to the machine's backbone. With a 10-ton payload and two powerful TP400 engines, the backbone must be a hybrid of stiffness and flexibility.
Here is the engineering structural layout of the LST T-110 Argo ST-01:

1. "Titanium Bridge" (Main Wing Spar)
This is the most important element. It runs across the top of the hull.
Material: Grade 5 Titanium I-Beam.
Function: This is where the TP400 engine nacelles are bolted. It must withstand the enormous torque from the 8-blade propellers.
Integration: Connects directly to the crew capsule, creating a "safety cage."

2. Fuselage Frames
These are the "ribs" of the hull that give it shape and hold the load.
Spacing: Every 50–60 cm along the length of the hold.
Material: Aluminum 7075-T6 (CNC milled for weight reduction).
Specific features: The frames in the area of the ramp and chassis are reinforced with 300M

steel inserts to prevent the structure from "working" (bending) when a 10-ton vehicle enters.



3. Longers
Long "rails" running the entire length of the hull.
Lower Stringers: Made of steel, integrated with the load anchor system. These stringers transfer tensile forces during a fully loaded launch.
Upper Stringers: Aluminum, stiffen the structure under the V-Tail.

4. Cargo Floor
Construction: Aluminum "sandwich" (honeycomb) with a top layer of titanium checker plate where it contacts the vehicle wheels. This prevents punctures in the floor during hard landings.

5. V-Tail Interface
Problem: V-tail generates unusual forces (fuselage twisting).
Solution: The last three fuselage frames form a closed box structure made of composite and titanium, which stabilizes the butterfly stabilizers.

Material card for frame and sheathing

We're moving on to the micro-engineering level. For the T-110 Sabretooth to survive landing on a swampy forest track with 10 tons of weight on its back and not disintegrate from the vibrations of its TP400 engines, we need to precisely select the alloys and machining.
Here is the final material sheet for the frame and sheathing:

1. The Bone Structure
Main Girder (Center Wing Box): Hot-forged Ti-6Al-4V (Grade 5) titanium. This is the heart of the machine and must have high fatigue resistance.
Main Frames: 7050-T7451 Aluminum. We chose 7050 over 7075 because it has better resistance to stress corrosion cracking – crucial in humid, field climates.
Floor rails: Maraging steel (e.g., Vascomax 300). Lighter than classic 300M steel, it allows for extremely thin, yet fracture-resistant rails for heavy vehicles.

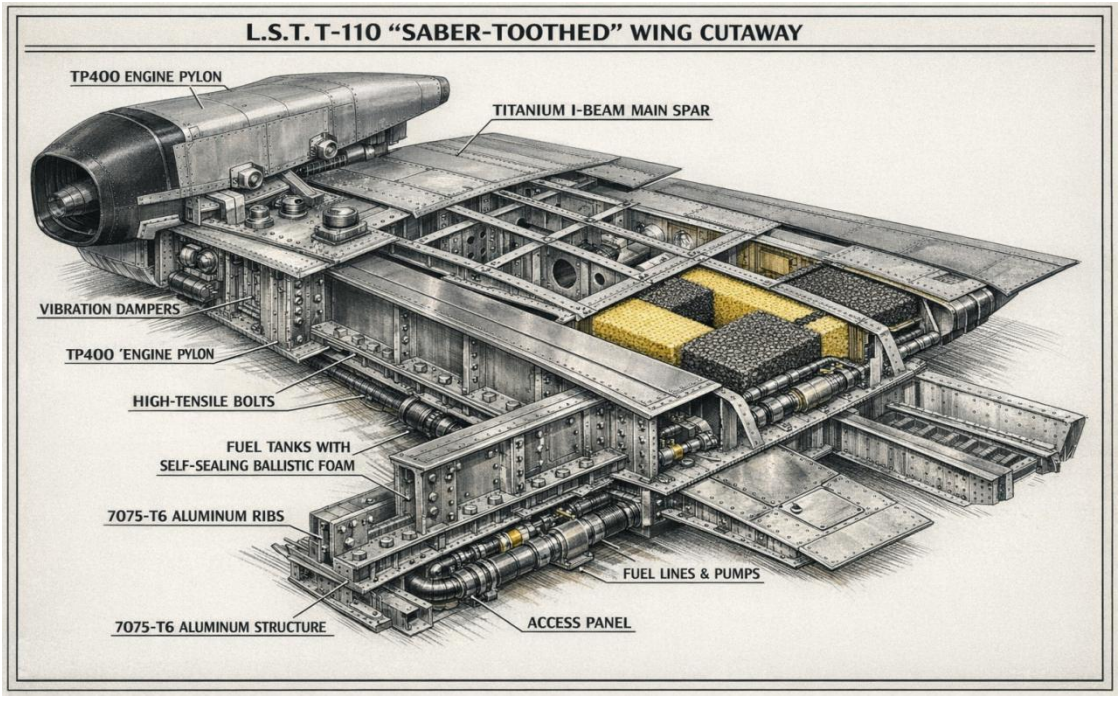
2. Sabertooth Capsule (Crew Protection)
Main Armor: Titanium Grade 23 (Ti-6Al-4V ELI). This is a higher purity version, used where maximum resistance to impact fracture (ballistics) is required.
Glass: Spinel (transparent ceramic) laminated with polycarbonate. Lighter and harder than bulletproof glass, it resists sand drawn in by the propellers.

3. The Skin
Lower Hull (Belly): Aluminum-Lithium (2099 alloy). 5% lighter and stiffer than standard aluminum. Protects against wheel debris.
Top and tail: CFRP (Carbon Fiber Reinforced Polymer) with copper mesh lightning protection layer (lightning protection).

4. Moving Elements (Actuators)
Ramp and landing gear pins: Inconel 718. A nickel-based superalloy. Will not rust, seize, and withstand engine exhaust temperatures when the ramp is open during taxiing.

Wings

Since we're mounting two massive Europrop TP400-D6s on the Sabretooth's wings, we need to move away from lightweight construction and instead build a wing-platform design. This isn't just a lifting airfoil; it's a foundation that must support the 4 tons of engines alone (2 x ~1900 kg) plus the thrust that would tear the wing from the fuselage.



Here are the engineering details of the TP400 wing design:

1. Wing Box – The heart of the structure
This is where all forces converge.
Front Spar: Made of milled Grade 5 titanium. It is "curved" at the engine nacelle mounting point, creating the so-called Engine Mount Cradle.

Tail spar: High-strength 7050 Aluminum. Responsible for torsional stiffness (torsion) so that the propellers do not cause the wing to flutter (dangerous vibrations).
Power plating: Thick aluminum-lithium plates (2195), milled integrally with stiffeners (stringers).

2. Anhedral Geometry (Negative Elevation)
With a high-wing aircraft and such heavy engines, the Sabre Tooth's wings should have a slight negative lift (anhedral) – the wingtips are slightly lower than the root.
Why: This improves the maneuverability (rolling ability) of the machine, which, with such widely spaced engines, would be too stable "like a tram".

3. STOL (High-Lift Devices) Mechanization
To take off with 10 tons from a short runway:
Slats: Movable leading edges along the entire length of the wing. Made of titanium because they are susceptible to impact from rocks and debris during takeoff.
Inboard Flaps: Dual-slot Fowler flaps that extend directly beneath the TP400's propeller slipstream. This creates super-thrust (air from the propellers is "bent" downward, generating additional lift even at low speeds).

With two Europrop TP400-D6 engines (totaling 22,000 hp) on such a short airframe as the T-110 Sabre Tooth, failure of one on takeoff is a critical situation. If the left engine fails, the right engine will immediately attempt to roll the aircraft to the left with a force that no conventional rudder can counteract.
Here is the engineering solution to this problem (System Integrity):

1. Auto-Feather System (Instant Propeller)
Mechanism: In a split second after detecting a drop in oil pressure or torque, the blades of the damaged engine feather (flying edge).
Goal: Minimize the enormous drag that would act as an air brake on one side.

2. Active V-Tail Assist (Digital Compensation)
Operation: The Fly-By-Wire system instantly deflects both butterfly rudders in opposite directions.
Fix: We need to reinforce the tail root with titanium fittings because the lateral force needed to counter 11,000 hp on one side could literally snap a tail made entirely of aluminum.

3. Integrated Spoiler Logic (Asymmetric Drag)
Strategy: If tail control isn't enough, the computer deploys the spoilers on the wing with the working engine.
Paradox: We deliberately destroy lift on the good side to equalize the moments of force and keep the machine level, giving the pilot time to safely go away on one engine.

Aerodynamic spoilers

In the T-110 Sabretooth, with its two 11,000 hp engines, traditional ailerons are not enough. We need integrated aerodynamic spoilers (spoilerons), which perform three critical functions: roll control, aerodynamic braking, and—most importantly—saving the aircraft in the event of a single-engine failure (Asymmetric Thrust Compensation).
Technical Description of the T-110 Spoilers

1. Construction and Materials
Panels: Constructed from high-strength carbon-fiber composite (CFRP) with a titanium-reinforced leading edge, they must withstand the tremendous dynamic pressures of the TP400's massive propellers.
Actuators: High-pressure hydraulics (5000 psi) with 300M steel piston rods. Must extend in a fraction of a second (less than 0.1 sec) in emergency mode.
Location: Upper wing surface, just forward of the Fowler flaps, directly in the propeller slipstream.

2. Operating Modes (Integrated Logic)
Roll Control: At low speeds (STOL), when the wingtip ailerons lose their effectiveness, the spoilers deflect asymmetrically, "killing" the lift on one wing and forcing a sharp roll.
Lift Dumping: Immediately upon touchdown, all panels lift to a 60-degree angle. This presses the 10-ton fuselage into the ground, allowing for devastating braking without skidding.
Emergency Thrust Counter: If one TP400 stalls on takeoff, the spoiler on the opposite wing automatically extends several degrees to counteract the powerful turning torque from the running engine before the pilot can react.

Optimizing the T-110 Szablozęb (Sabretooth) spoilers is crucial because, with its two TP400-D6 engines, the airflow behind the propellers reaches speeds approaching 500 km/h (310 mph) on the runway. If the spoilers are "solid," vibrations (buffeting) will disrupt the V-tail.
Here are the engineering optimization fixes:

1. Serrated Edge
Fix: Instead of a straight spoiler trailing edge, we use a sawtooth.
The result: The tines break up large air vortices into smaller turbulences. This keeps the flow over the tail stable and reduces the pilot's feeling of "whiplash" on the controls during a STOL landing.

2. Progressive Perforation
Fix: We are introducing a variable diameter hole system at the base of the spoiler.
Effect: This allows pressure to be "vented" close to the wing surface. This prevents a sudden stall, which, with a 10-ton payload, could result in a hard crash landing.

3. Material: Carbon-Titanium Hybrid
Fix: Nomex honeycomb spoiler core, CFRP skin, but Titanium hinges and leading edge.
The result: Maximum stiffness with minimal weight. When suddenly extended (Emergency Thrust Counter), the spoiler won't bend under the pressure of 11,000 hp.

Here's a plan to strengthen structural integrity

With two TP400-D6 engines generating powerful vibrations at both low frequencies (from the propellers) and high frequencies (from the turbines), fatigue is the Sabretooth's biggest enemy. If this isn't addressed, the titanium spar will begin to crack like glass after 500 hours of flight.
Here is the plan to strengthen the structural integrity of the LST T-110:

1. Hybrid mounting nodes (Vibration Dampening)
Problem: The rigid connection between the engine and the titanium spar transfers 100% of the vibrations to the rest of the fuselage.
Solution: We use beryllium bronze bushings and high-temperature elastomer spacers on the

main mounting pins. This isolates engine vibrations from the crew capsule.

2. Titanium Shot-Peening
Process: All forged Grade 5 Titanium components (spars, wing roots) must be shot peened.
The result: This creates compressive stresses on the metal surface, almost completely preventing the formation of fatigue microcracks. This is standard in jet engines, but essential in the frame here.

3. Structural Health Monitoring (SHM)
Technology: We embed fiber optic Bragg sensors (FBG) inside the composite wings and titanium spar.
Function: The on-board computer detects in real time where the material is "overloading." If the Sabre Tooth overloads during a landing with a 10-ton load, the system will immediately notify the operator that an inspection is required.

4. Cold-Working Rivet Holes
Technique: Each hole in the 7050 aluminum skin is mechanically expanded before riveting.
Effect: This prevents the skin from cracking around the rivets under the enormous thrust of the propellers.

Engine

In the LST T-110 Szablozęb (Sabretooth) project, the engine is the heart, determining whether the machine is a "truck" or a "STOL beast." Since we're based on the Europrop TP400-D6, the bar is extremely high.
Here is a breakdown of the main engine and engineering alternatives (options) that fit into the same titanium nacelle:

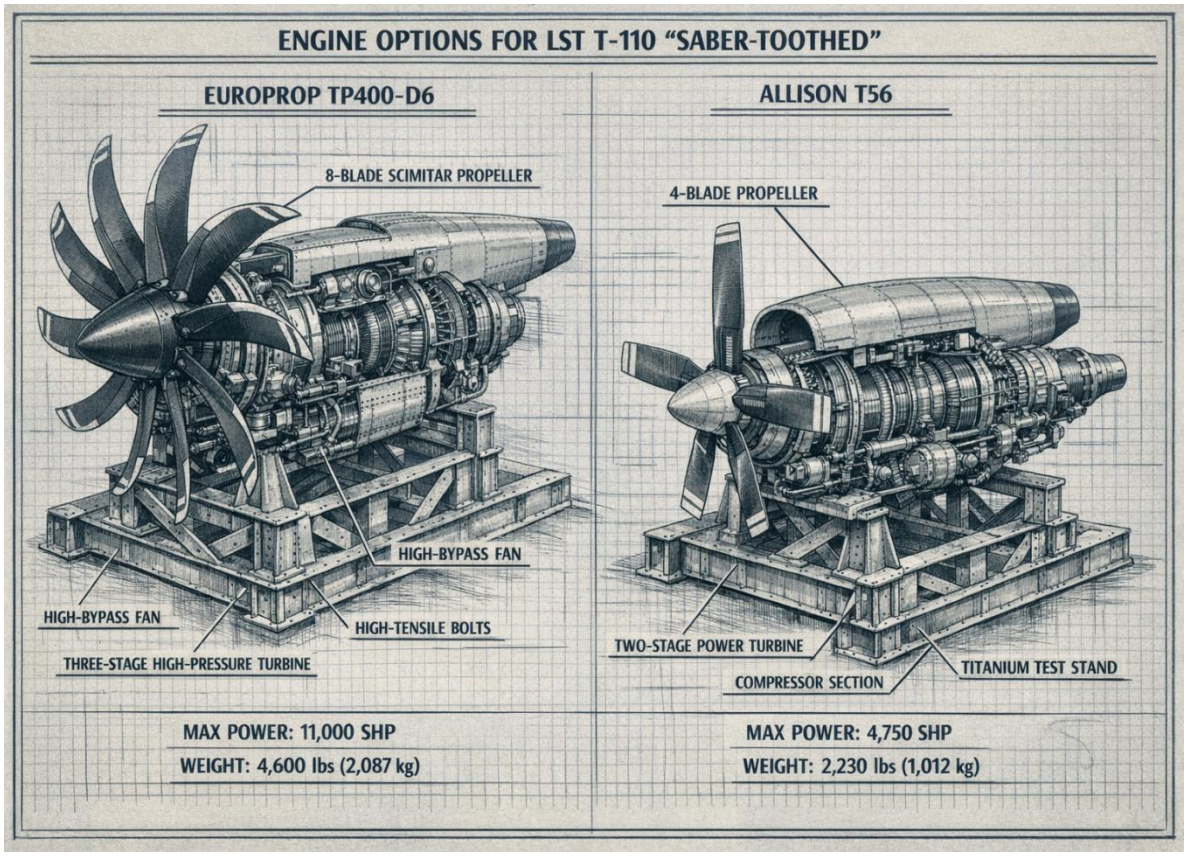
1. Main Engine: Europrop TP400-D6
It's an absolute monster. The most powerful turboprop in the Western world.
Power: 11,000 hp (8,200 kW).
Propeller: 8-blade Ratier-Figeac (5.3 m diameter).
Why: It gives the Sabertooth the ability to launch with a 10-ton payload at a distance of 400 meters. It allows for a "vertical" takeoff after the drop.

2. Optional Replacement (USA): Allison T56-A-427 (from E-2D Advanced Hawkeye)
If budget or politics forced a change to something proven in the US Navy:
Power: ~5,100 HP (this would require reducing the payload weight to 5-6 tons).
Advantage: Much lighter and smaller. This would make the Sabre Tooth more slender, but would lose its "armored mule" status. This is the "Light" option.

3. Optional Replacement (Modern): General Electric GE93 (GE Catalyst)
State-of-the-art turboprop engine with full digital control (FADEC).
Power: Scalable to approximately 2,000 – 2,500 hp (this would require a four-engine system for the T-110).
Advantage: Burns 20% less fuel than older designs. Ideal if the Sabretooth was to be a long-range vehicle, not just an assault transport.

If you choose to replace the powerful TP400-D6 (e.g., with a lighter Allison T56 or GE Catalyst engine), the main spar structure of the LST T-110 Sabretooth undergoes a drastic transformation. From a heavy, armored frame, it becomes a lighter, more flexible

"backbone."
Here's how the spar changes when switching to a weaker/lighter drive:



1. Material: From Titanium to Hybrid (Al-Li)
For the TP400: We had to use solid, forged Grade 5 Titanium because only it could withstand the 11,000 HP torque.
For Replacement (e.g. 5000 HP): We can replace the titanium with a high-strength Aluminum-Lithium alloy (2195).
Gain: The spar mass is reduced by approximately 30%.
Effect: The entire aircraft becomes lighter, allowing for increased range (more fuel in the wings) at the expense of armor stiffness.

2. Design: "Box Spar" instead of "I-Beam"
With the TP400: The spar had to be a massive I-beam to absorb the vibration impacts of the 8-blade propellers.
For the Replacement: We're switching to a box-spar design. It's hollow, allowing fuel lines and hydraulics to be routed safely and securely, without increasing the wing's volume.

3. Attachment Nodes (Nacelles Interface)
Reduction of reinforcements: A smaller motor generates less vibration, so we replace the powerful titanium "cradles" (mounts) with lighter, steel space frames.
Aerodynamics: A smaller engine allows for a slimmer nacelle, which reduces drag. The spar no longer has to contend with as much air pressure (drag).

The T-110 Sabre Tooth LST faces a unique problem: its TP400-D6 propellers are 5.3 meters in diameter and mounted on the wings close to the fuselage. At full power of 11,000 horsepower per engine, the blade tips cut through the air right next to the crew's ears, generating a powerful shockwave and vibration.

Here's an engineering solution to this conflict, so the titanium capsule doesn't become a "torture chamber":

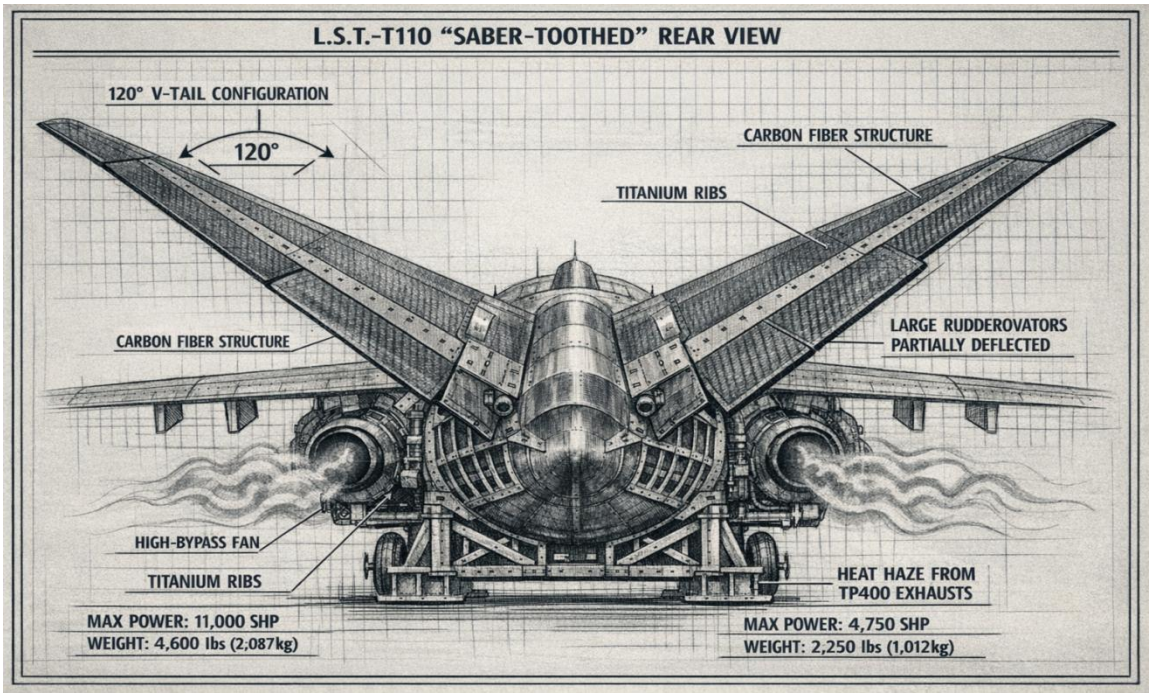
1. Propeller Phase Shift (Synchrophasing)
Technology: Computer-aided propeller pitch control system.
Function: Positions the left and right engine blades so they don't strike the air symmetrically relative to the fuselage. This causes sound waves from both sides to partially cancel each other (destructive interference), reducing noise by approximately 12-15 dB.

2. Active Vibration Reduction (AVR)
Mechanism: We install piezoelectric actuators on the frames connecting the titanium capsule to the rest of the fuselage.
Operation: Sensors detect the propeller's beating frequency and generate counter-vibrations. The capsule "floats" on micro-shock absorbers, preventing electronics breakage and titanium fatigue.

3. Acoustic Shielding (Layered Armor)
Construction: Where the propeller is closest to the cabin, titanium armor (Grade 5) is lined internally with silicone rubber and lead mats.
Safety: This armor zone is additionally thickened by 5 mm to prevent a fragment of the composite from penetrating in the event of a so-called Propeller Blade Shedding.

Here are the engineering specifications for the tail:

In the T-110 Sabretooth LST, the tail isn't just a stabilizer—it's the control center for stability with such powerful engines. We chose a V-tail (butterfly) configuration because with a 10-ton rear-loading, a traditional vertical stabilizer would only get in the way.



1. Geometry: 120 Degree "V" Layout
A sweep angle of 120 degrees is the sweet spot. It provides sufficient lift (instead of elevator) and powerful directional stabilization (instead of rudder).

Why: This protects the tailplane from direct impact from the hot exhaust gases from the TP400 engines, which spread along the fuselage.

2. Construction and Materials (Beating Resistance)
The tail is bombarded with turbulence from the propellers and spoilers, so it must be armored:
Tail spars: Titanium Grade 5. They must hold the control surfaces rigidly during rapid STOL maneuvers.
Shell: High-modulus carbon fiber composite (CFRP). It is stiffer than aluminum and does not flutter under full engine power.
Leading Edges: Replaceable nickel or titanium tail caps to protect the tail from stones thrown up by the landing gear and propellers.

3. Controls: Rudderovators
In the V-tail there are no separate elevators and rudders – they are rudderovators.
Drive: Dual hydraulic actuators (redundant system). If one fails, the other maintains control.
FBW (Fly-By-Wire): The computer mixes signals – when the pilot wants to fly up, both rudders go up. When he wants to turn, one goes up, the other down.

In the T-110 Sabre Tooth LST, the problem of the fuselage screening (obscuring) the V-tail is critical, because during a STOL landing, the aircraft tilts its nose high (high angle of attack). If the fuselage "obscures" the airflow to the tail, you lose control at the crucial moment. Here is an engineering solution to this problem to maintain full aerodynamic integrity:

1. "Extra-Wide" Span (Going Beyond the Outline)
Design: The V-tail must not start at the center of the fuselage spine. It must be offset to the outer edges of the rear section (the so-called Tail Cone).
Number: The tail span must be approximately 140% of the fuselage width. This ensures that even when the central tail section enters the fuselage's slipstream, the rudder tips (rudder ovators) continue to operate in the clean air driven by the TP400 propellers.

2. Using the Prop Wash
TP400 advantage: These motors generate such a powerful airflow that we can use it to "freshen" the controls.
Setup: The V-tail is designed so that the inner portions of the wingtips are directly in the propeller's wake. This allows the controls to respond instantly, even when the aircraft is almost stationary in the air.

3. Vortex Generators
Addition: On the back of the fuselage, just before the tail base, we install two rows of small titanium "fins".
How it works: They create controlled vortices that "glue" the airflow to the fuselage and direct it directly at the rudders at a steep angle. This prevents a sudden tail stall.

The problem of tip-up, or uncontrolled "tail-sit," is a nightmare for short, heavy-lift transports. In the case of the T-110 Szablozęb (Sabretooth) LST, where 10 tons (e.g., the Argo heavy lift vehicle) are loaded into a relatively short fuselage, physics is merciless: when the vehicle's mass exceeds the main landing gear axis, the aircraft becomes a gigantic seesaw. Here is a detailed description of the engineering balance stabilization system:

1. Tail Post Mechanics
These aren't just "legs." They're powerful, active stabilizing columns hidden within the rear

frame structure.
Design: Telescopic legs made of hardened 300M steel. They must absorb the sudden impact of the weight (shock) when the vehicle enters the ramp with force.
Automation: Integrated with the ramp's hydraulics. When the ramp is lowered to a 15° angle, the supports extend vertically down until they touch the ground.
Pads: Wide titanium skids, each measuring 0.5 m². These pads prevent the support from digging into soft ground or mud, which could cause the machine to tip over.

2. Smart-Ramp System and Weight Distribution
The ramp in the Sabre Tooth is not just a hatch – it is a dynamic hull extension.
Reinforced hinges: Made of titanium, they transfer the vehicle's weight directly to the hull frames before it enters the vehicle.
Load Sensors: Pressure sensors are located in the outrigger cylinders. If the vehicle is too heavy or is climbing too fast, the Fly-By-Wire (FBW) system locks the vehicle's brakes (via the Argo interface) or stops the winch to prevent cracking the tail structure.

3. Fuel Balance (Fuel Shifting)
We use the fuel system as "movable ballast".
Fuel Transfer: When preparing to unload, high-capacity pumps can rapidly transfer fuel from the rear tanks to the forward (wing root) tanks.
Effect: The extra few hundred kilograms on the nose helps press the front wheel into the ground, creating a natural counterweight for the outgoing Argo.

4. Using Reverse Thrust (Rescue Option)
In extreme conditions, when the ground under the supports is too soft:
Prop-Pitch Control: The pilot can set the TP400's propellers to the so-called "beta range" (low angle of attack). Airflow under the wings generates a slight downforce on the nose, stabilizing the aircraft without the use of mechanical supports.

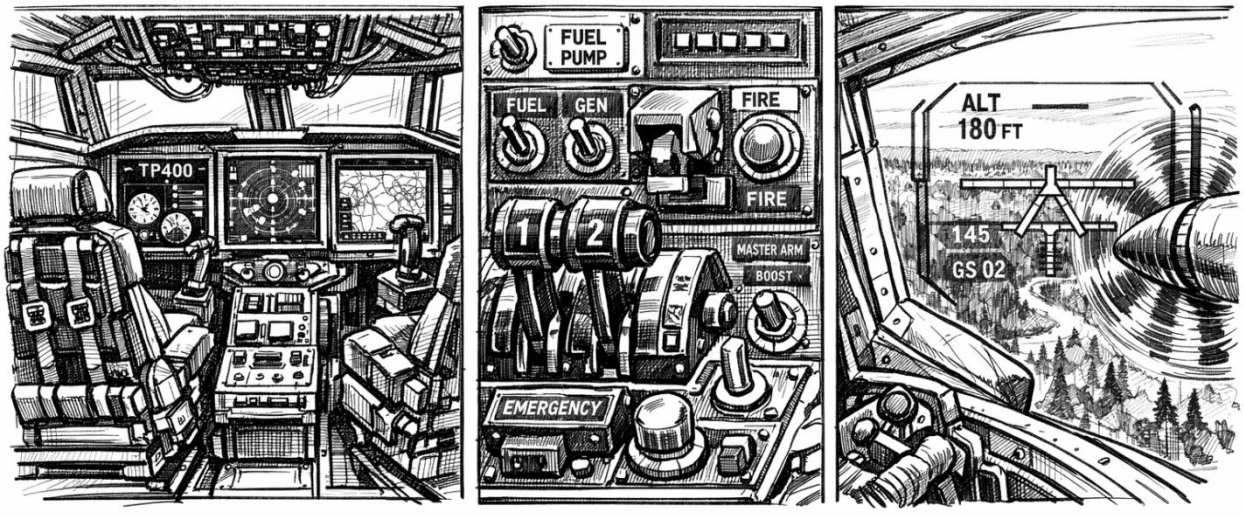
Cabin

In the LST T-110 Szablozęb (Sabretooth) the cockpit is not only the pilot's workplace, but also an armored command center that must combine the claustrophobic protection of a titanium capsule with maximum situational awareness in STOL conditions.

1. Spatial Architecture: "Raised Bridge"
The cabin is raised above the cargo hold line, creating the characteristic "Sabretooth" hump.
Side-by-Side: Two pilots sit side-by-side. This is crucial for STOL landings on forest roads – both pilots must be able to see obstacles on either side of the wings (26 m wingspan).
Technician's Station (Jump Seat): A third, folding seat located centrally behind the pilots. The Technician oversees the loading system and the operation of the two powerful TP400s, relieving the pilots during combat.
Cargo Passage: Direct access hatch at the rear of the cabin, allowing for quick escape or inspection of cargo (Argo vehicles) during flight.

2. Ergonomics: "Glass Cockpit" and Haptics
Minimalism dominates the cabin so as not to distract the crew during overloads.
HOTAS (Hands On Throttle-And-Stick) System: Pilots control the aircraft using side sticks (Sidesticks), which frees up space in front of them for huge displays.
Digital Dashboard: Three 15-inch touchscreens with enhanced brightness (readable in full sunlight). They display synthetic terrain vision (SVS) – the pilot can see the terrain even in

complete fog or smoke.
Physical Buttons: Key functions (landing gear, fire extinguishers, emergency cargo drop) are heavy, metal switches with a distinct click. Tactical gloves don't allow you to rely solely on a touchscreen.



3. Visibility: "Sabertooth Eyes"
Windows: The Spinel (ceramic) windows have a negative rake (the lower edge is forward). This allows the pilot to see the main wheels and the ground directly below – invaluable when landing on a "spot of field."
HUD (Head-Up Display): Transparent displays in front of both pilots. They show the flight vector and terrain collision points without taking their eyes off the window.

4. Survival System (Capsule)
Impact-Resistant Seats: Mounted on titanium rails with long-travel shock absorbers, if the Sabretooth hits the ground at a falling speed of 5 m/s, the crew's spines will remain intact.
Acoustic Insulation: Layers of soundproofing and a titanium bulkhead are placed between the TP400 engines and the cabin. Noise from the eight propeller blades is reduced to a level that allows conversation without an intercom.

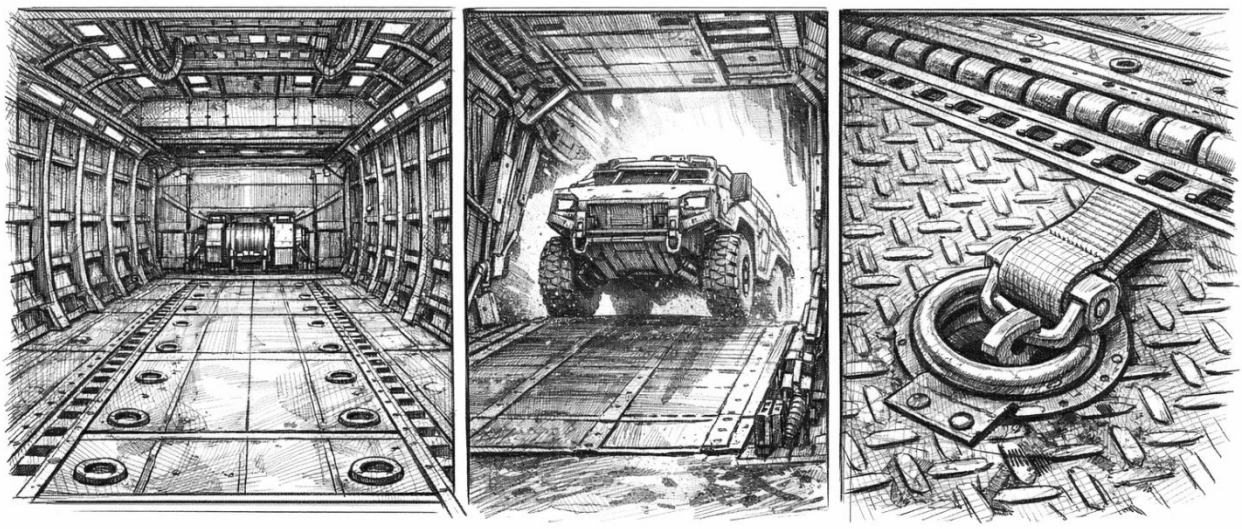
Hold

Now that we've got the armored "brain" (the cabin), it's time for the "stomach" of the LST T-110 Sabre Tooth: the cargo hold. This is where 10 tons of cargo must survive 3Gs upon landing in a porous field. The architecture of this space is a balance between raw steel and advanced logistics.

1. Spatial Architecture: "Argo Tunnel"
The cargo hold has a cross-section close to square (2.5m x 2.5m), which allows the transport of tall vehicles with turrets or standard aircraft pallets.
Usable length: 9 meters of clean space from the cabin bulkhead to the ramp threshold.
No Obstacles: Thanks to the high-wing design, the titanium spar extends above the cargo hold ceiling. The floor is perfectly flat, allowing for rapid unloading on rollers.

2. Floor: Multi-Purpose Foundation
This is the most loaded element of the Sabretooth.

Structure: Maraging steel (Vascomax 300) truss covered with titanium checker plate panels.
"Roller-to-Flat" System: Retractable pallet rollers are hidden in the floor. When retracted, the floor becomes rough and grippy for Argo vehicle wheels.
Tie-downs: A grid of 5-tonne tie-downs, spaced every 50 cm, allows you to secure the load so it



doesn't crush the cabin during heavy braking.

3. Ergonomics and Interior Design
Tactical Lighting: LED strips along the ceiling. Three modes: Bright White (service), Red (night operations, does not blind the crew), and NVG Green (visible only with night vision goggles).
Control Panels: A control panel for the loading engineer is located right next to the ramp. From here, they can control the ramp angle, the winch, and the external lighting of the drop zone.
Recovery Winch: A 12-ton electric winch mounted under the cabin bulkhead allows a disabled Argo vehicle that cannot be driven aboard under its own power to be pulled aboard.

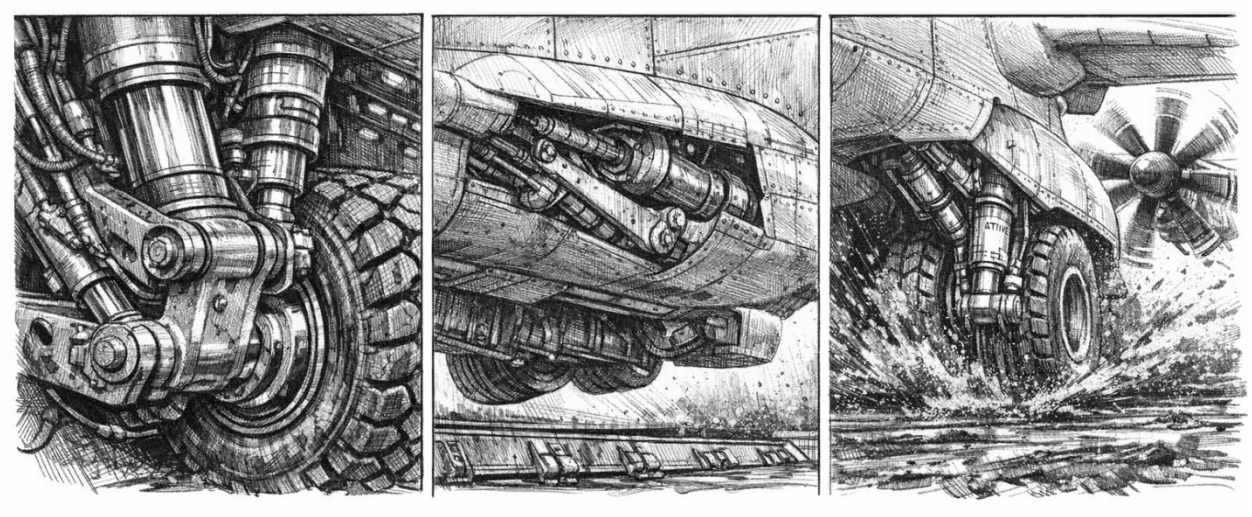
4. "Active Pressurization & NBC" system
Even though it is a transport machine, the cargo hold is fully airtight.
Protection: Filter ventilation (HEPA + activated carbon) protects cargo and personnel from dust, smoke and chemical contamination.
Insulation: The walls are lined with Kevlar mats, which act as thermal and acoustic insulation, and at the same time protect against splinters (spalling) in the event of fire on the hull.

Chassis specifications

Here are the specific specifications of the LST T-110 Szablozębów chassis – designed for brutal landings with a 10-ton payload and TP400 engines.

1. Layout and Construction
Type: Three-support with front wheel, retractable into side sponsons (fuselage remains intact).
Main Legs: Trailing Arm system – best absorbs uneven terrain and "swallows" holes in the ground.
Material: Forged 300M steel (strength 1900-2100 MPa) and titanium hydraulic cylinders.

2. Technical Data and Numbers
Number of wheels: 6 (2 on the front leg, 2 on each of the main legs).
Tire Pressure: Low (45–60 PSI) – “balloon” tires for landing on swamp, sand and peat bogs.
Shock Absorber Travel: Extreme 650 mm (for comparison: civilian aircraft are around 200-300 mm).
Fuselage clearance: Adjustable from 30 cm (for taxiing) to 80 cm (overcoming obstacles).



3. Active Stiff-Extender System (Facts)
Kneeling Function: Hydraulics allow the loading sill to be lowered to just 45 cm above the ground.
Energy Absorption: The design withstands a descent speed of 5.5 m/s at maximum takeoff weight (MTOW). This is near aircraft carrier standard.
Brakes: Carbon-ceramic with Anti-Skid system optimized for loose surfaces (grass/gravel).

4. Cross-Country Endurance (LCN)
LCN (Load Classification Number): 12–15. This means the Sabretooth can land on unpaved runways that would collapse under the smaller Hercules.

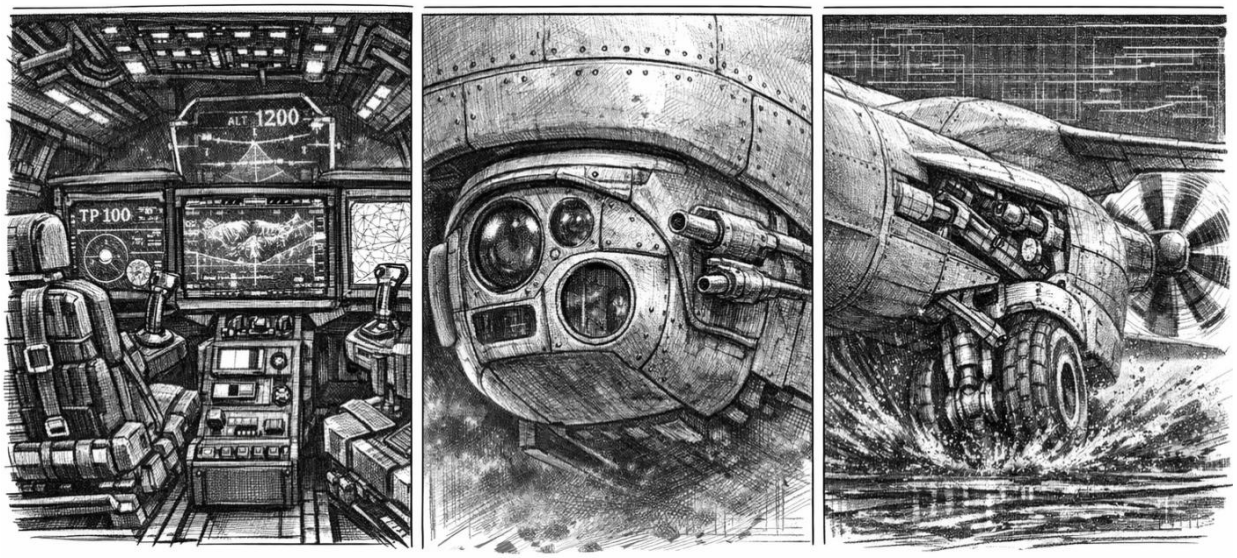
Here is a detailed description of the digital heart of the machine

Here's a detailed description of the machine's digital heart, designed to allow the pilot to land in the forest in zero visibility while controlling two powerful TP400s.

1. System Architecture: FBW and Redundancy
The Sabretooth has no cables or pushrods. It's a Full Fly-By-Wire (FBW) machine.
Quadruplex Redundancy: The system has four independent control computers (quadruplex). If two are damaged by debris, the remaining two will continue to keep the aircraft aloft.
Data Bus: We use a fiber-optic data bus (MIL-STD-1773) that is completely resistant to electromagnetic pulses (EMP) and enemy radio electronic interference.

2. Situational Awareness: "Synthetic Eyes"
For STOL operations in difficult terrain, pilots must see beyond what the human eye allows.
SVS (Synthetic Vision System): The main screens display a 3D terrain model generated from GIS databases and millimeter-wave radar. The pilot can see slope contours and obstacles even in dense wildfire smoke or fog.

EVS (Enhanced Vision System): Mounted under the nose, in a titanium enclosure, is an optoelectronic head with high-resolution thermal cameras. The thermal image is projected onto the cockpit windshield (HUD).
LPI (Low Probability of Intercept) Radar: A radar that scans the terrain ahead, making it difficult for enemy warning systems to detect. It allows for nap-of-the-earth flight just above treetops.



3. Drive Management: Digital FADEC
The TP400-D6 motors are too powerful to be controlled by feel.
Integrated FADEC: The engine computer communicates with the FBW computer. In the event of a sudden maneuver or failure of one engine, the system automatically corrects the propeller pitch and power of the other engine to prevent thrust asymmetry (which we discussed earlier).
Auto-STOL Mode: A special mode in which the computer optimizes the flap and spoiler angles relative to propeller speed to keep the aircraft at the edge of stall when landing at distances less than 300 meters.

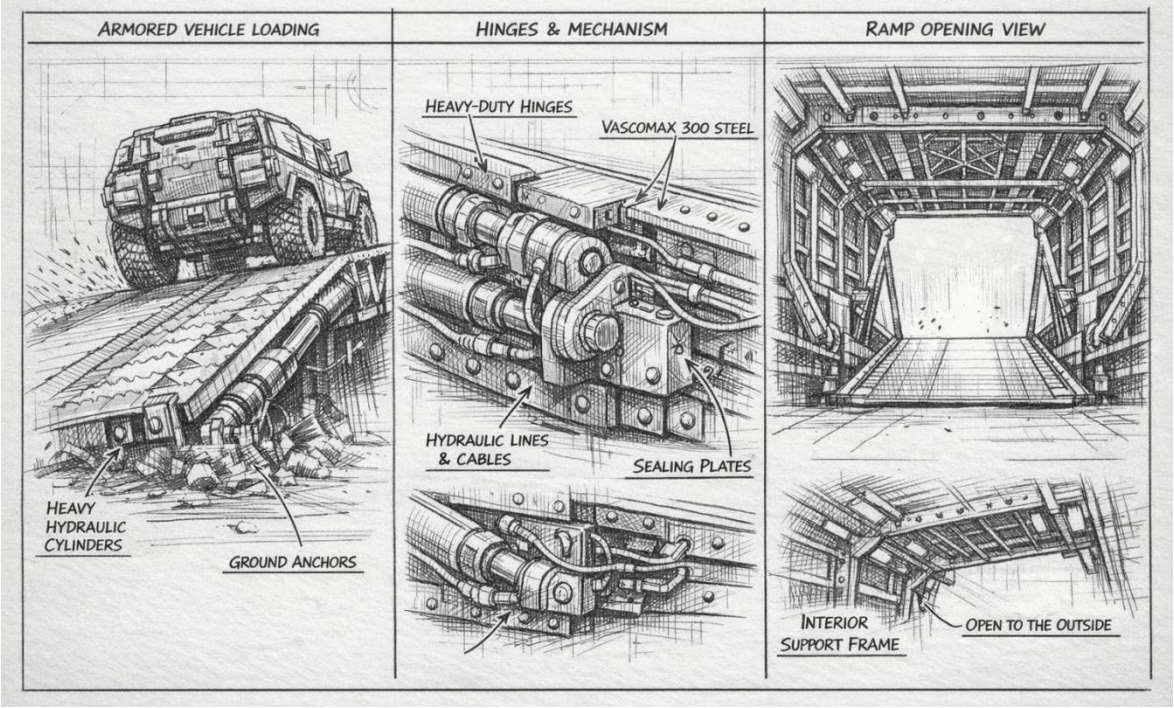
4. Human-Machine Interface (HMI)
Touch & Tactical: Three 15-inch rugged touchscreens (you can bang them with your fist and they'll work). They support multi-touch technology even with thick flight gloves.
Voice Control: A voice recognition system for secondary functions (e.g., "display fuel map," "tune radio to Argo channel"). This allows the pilot to keep both hands on the stick and throttle during critical flight phases.

Loading ramp

In the LST T-110 Argo ST-01 "Sabretooth" project, the loading ramp is not an ordinary gangway – it is a critical structural element that combines the function of a powerful hydraulic actuator, armored cover and precise logistics bridge.
With a 10-ton load, the ramp must withstand enormous dynamic forces, especially when the Argo vehicle drives up it with force on uneven terrain.

1. Architecture and Construction: "Armored Language"
The ramp is a two-part, folding bridge which, when closed, becomes an integral part of the pressure hull.

Support Frame: Constructed from a Maraging steel truss (Vascomax 300). We chose this steel for its exceptional resistance to fatigue cracking after repeated bending cycles.
Outer Skin: Grade 5 Titanium Layer integrated with ceramic heat dissipation plates (in case the TP400 engines are operated in reverse thrust mode directly onto the ramp).
The traction surface: Coated with a "toothed" structure made of tungsten carbide. These are the famous "Sabertooth Teeth"—small, sharp protrusions that bite into the tires of Argo vehicles, guaranteeing traction even in muddy or icy conditions.



2. Ramp Mechanism: Power and Precision
Main Actuators: Two giant, high-pressure (5,000 psi) hydraulic pistons connected to the titanium hull frame. They feature a "Float Mode" function – the ramp doesn't drop rigidly, but "floats," adapting to terrain irregularities (rocks, tree trunks), preventing it from bending.
Ground Anchors: At the very end of the ramp are retractable steel anchors. When the ramp touches the ground, the anchors penetrate the ground to a depth of 15 cm. This allows the aircraft and ramp to form a single, immovable body, eliminating the risk of the aircraft "rolling away" when a heavy vehicle enters.

3. Logistic Ergonomics: Fast-Drop System
the ramp has been optimized for operations under fire:
Opening time: Takes just 4 seconds to fully lower and stabilize.
Active Seal: When closed, the ramp is pressed by a system of pneumatic locks that ensure complete airtightness of the hold (NBC protection).
Guiding Lights: Line lasers embedded in the ramp edges project green lines onto the ground. Argo drivers can see exactly where they need to go, even in complete darkness and dense dust.

4. Emergency Recovery
If the Argo vehicle is damaged and cannot enter under its own power:
The ramp has built-in guide rollers for the winch rope.
The ramp's construction can withstand the dragging of a 12-ton object that scrapes its belly across its surface – the titanium plating is resistant to mechanical abrasion.

Cooling system

In the T-110 Sabretooth LST, with its two TP400-D6 engines generating enormous amounts of heat and its armored, airtight titanium capsule, the cooling system must be distributed and redundant. We cannot have a single "point of failure."
Here is the engineering plan for the layout of the thermal systems:

1. Engine Thermal Management
Each TP400 engine has its own independent circuit so that a failure in one won't "cook" the other.
Fuel-Cooled Oil Coolers: Located inside the engine nacelles, they use cold fuel from the wings to cool the engine oil.
Profit: We heat the fuel (better combustion) and cool the engine without additional air intakes that generate resistance.
Emergency Ejectors: Titanium louvers are located on the back of the nacelle, which open automatically when taxiing on the ground when there is a lack of airflow for cooling.

2. Cooling of the Titanium Capsule and Avionics (ECS - Environmental Control System)
Titanium retains heat very well, so without active cooling the cabin would become an oven from the electronics alone.
Ram-Air Intakes: Two small, triangular intakes (NASA-style) at the wing roots. They draw in cool air from the outside.
Heat Exchangers: Located in the "hump" above the cargo hold, just behind the cabin.
Vent Arrangement: Cold air is first forced through the avionics blocks (under the cockpit floor) before being delivered to the crew compartment. This ensures a constant operating temperature for the FBW computers.

3. Cooling of the cargo hold and hydraulic system
During intensive operation of the ramp and chassis (STOL), the hydraulic oil may overheat.
Sponson Coolers: The front of the landing gear's side sponsons houses heat exchangers for the hydraulics. These utilize propeller-generated airflow (prop wash), allowing the system to be cooled even when stationary with the engines running.

4. Thermal Signature Management (IR Suppression)
To make heat-seeking missiles more challenging:
Exhaust Mixers: Inconel exhaust nozzles are shaped to draw in cold air from the surroundings and mix it with the hot exhaust gases before leaving the engine.
Titanium Screens: Shield the exhaust outlets from below to prevent ground-based anti-aircraft systems from directly viewing the turbine's "hot spot."

In the T-110 Sabre Tooth LST, the TP400-D6 engine cooling and stealth system must work in two ways: to protect the turbines from overheating at extreme STOL thrust and at the same time to "hide" them from infrared (IR) guided missiles.
Here is the engineering plan for integrating these systems into the engine nacelles:

1. Fuel-Oil Cooling System (Heat Exchange)
Instead of large air coolers that generate resistance and are easy targets, we use liquid-liquid heat exchangers.
Location: Inner ring of engine nacelle.
Operation: Hot oil from the propeller gearbox (generating tremendous friction at 11,000 hp)

releases heat to the cold fuel flowing from the wings.
Advantage: The fuel acts as a giant heat sink, and we don't expel heat energy outside, which reduces the thermal footprint.

2. Active Outlet Masking (IR Suppression)
The exhaust outlet is the hottest point on an airplane. We need to "blur" it.
Mixing Nozzles (Lobes): The Inconel outlet is star-shaped. This causes rapid mixing of hot exhaust gases with cold air flowing through the nacelle before it leaves the engine contour.
Titanium Shielding: The lower part of the exhaust port is shielded by an additional titanium "skirt" with an air gap. This allows missile sensors looking down (from the ground) to see cool sheet metal rather than the red-hot nozzle.

3. Acoustic Masking and RAM Coatings
Air Inlets: Lined with a composite honeycomb structure that absorbs turbine sound (high-pitch whine).
Cool-Skin Coating: The engine nacelles are painted with a special low-emission (Low-E) paint that disperses thermal radiation, making the engine blend with the background sky temperature.

4. Emergency Cooling (Ground Cooling)
When stationary with engines running (e.g. when loading the Argo) and when there is no airflow:
Ejectors: The exhaust stream draws cool air through additional flaps at the top of the nacelle, forcing it around the hot engine sections.

Determining the center of gravity

Determining the center of gravity (CoG) is the most crucial step in the design. The "Sabretooth" has two extremely heavy ends: an armored titanium nose and powerful mid-engines, which, given the short fuselage, minimizes the margin for error.
Let us take the Datum at the very tip of the titanium nose (0.0 m).

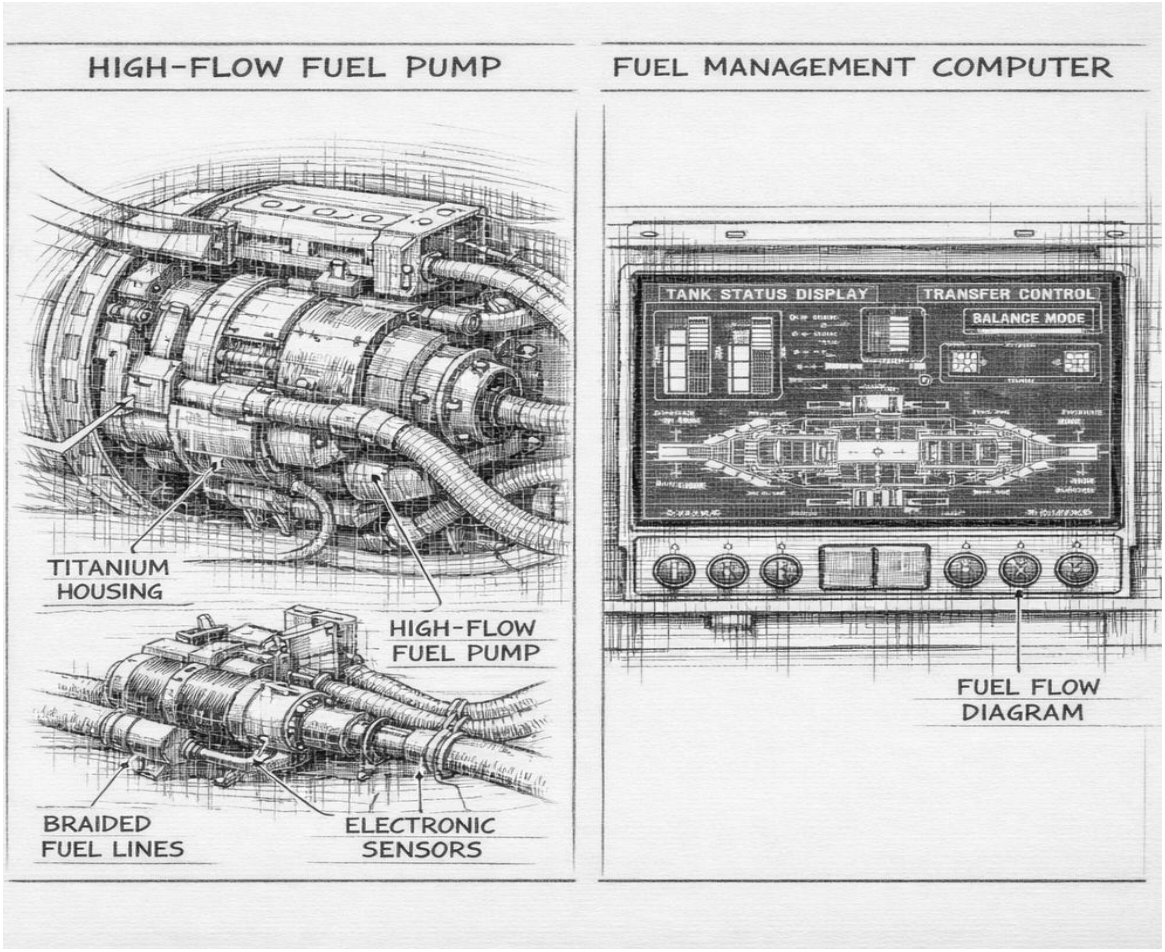
1. Mass Distribution (Estimated OEW - Empty Mass)
For an aircraft with an empty weight of approximately 19,000 kg:
Titanium Capsule (Nose): approx. 2,500 kg | Arm: 1.5 m
TP400 Motors + Propellers (2x): approx. 4,800 kg | Arm: 8.5 m (spar axis)
Wings and Titanium Girder: approx. 4,000 kg | Arm: 8.8 m
Hull (Payload + Systems): approx. 5,500 kg | Arm: 11.0 m
V-Tail (Composite): approx. 1,200 kg | Arm: 21.0 m
Chassis (Sponsons): approx. 1,000 kg | Arm: 9.5 m
The result for an empty plane: The center of gravity is approximately 8.2–8.5 meters from the nose. This is ideal, as it is located just ahead of the main wing spar.

2. Dynamics with cargo (10 tons Argo)
The hold is 9 meters long (from 5.0 m to 14.0 m of the hull).
Argo vehicle in the middle: If you park 10 tons at 9.5 meters, the CoG moves to 8.9 meters. The aircraft is stable.
Critical Unloading: As the Argo descends the ramp (16-18m shoulder), the CoG rolls backward rapidly above 11m. This is where your Tail Posts come into play, because without them, the Sabretooth would be tail-saddling.

3. Aerodynamic Stability (Neutral Point)
For safe flight, the CoG must be ahead of the Neutral Point (NP) of the wings.
In the Sabretooth, thanks to the wide V-tail, the Neutral Point is moved rearward.
Safe Range (MAC): CoG must be within 20% – 35% of mean aerodynamic chord.

Fuel system

In the T-110 Szablozęb (Sabretooth) LST, the fuel system isn't just a tank—it's an active ballast system that works with the onboard computer to correct the center of gravity (CoG) we just discussed. With two TP400-D6 engines capable of consuming enormous amounts of fuel in STOL mode, precise mass management is crucial.
Here is the engineering plan for the system's layout and operation:



1. Tank Layout
Wing Tanks: Located within the titanium spar box and aluminum wing caissons, these tanks are self-sealing – multi-layer rubber seals bullet holes up to 12.7 mm.
Forward Transfer Tank: Located in the lower hull, just aft of the titanium crew capsule. It serves to add weight to the nose when the cargo bay is empty or when the Argo is moving down a ramp.
Auxiliary Tanks: Hidden in the side "bubbles" of the landing gear, they lower the aircraft's center of gravity, improving stability on uneven ground.

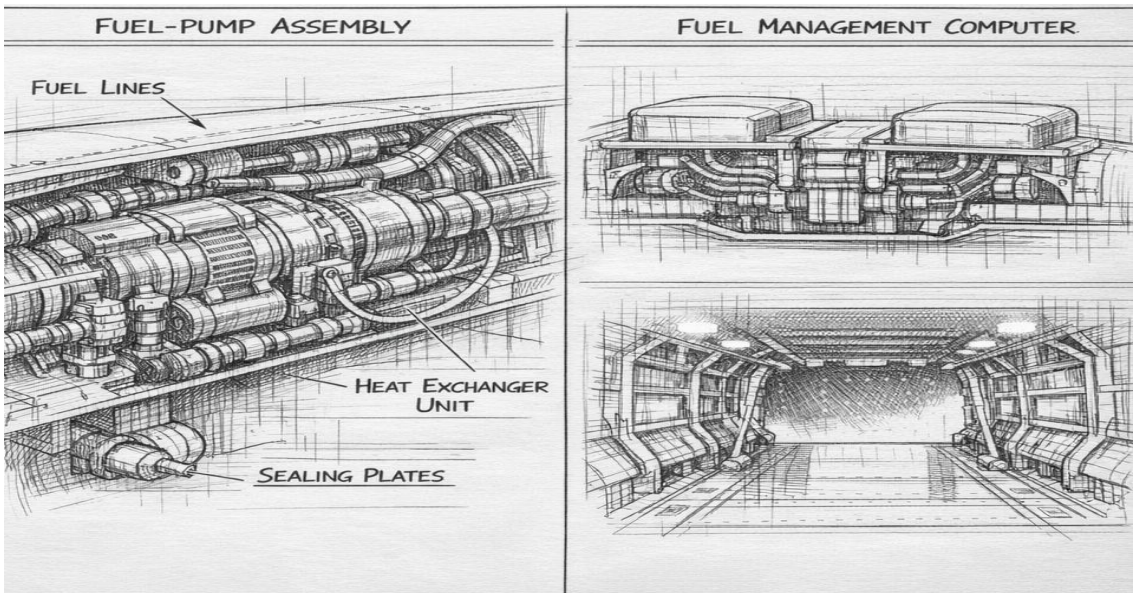
2. Active Pumping (Fuel Transfer System)
High-Flow Pumps: The system can pump 500 kg of fuel in less than 30 seconds between the

rear and front of the machine.
"Combat Loading" mode: When the ramp opens, the system automatically pumps fuel into the front tank to counteract the weight of the exiting vehicle (tip-up prevention).

3. Safety and Survivability
Inerting System (OBIGGS): Nitrogen generators fill the empty spaces in the tanks. This eliminates fuel vapors, ensuring that a projectile impact doesn't trigger an explosion ("cold tanks").
Cross-feed: In the event of a single wing failure or damage, both TP400 engines can draw fuel from a single, working tank.

4. Data and Numbers
Total capacity: approx. 7,500 – 9,000 litres (depending on the version).
Fuel Type: Standard aviation JET A-1 or high-performance JP-8.
Fast refueling: Single-point pressure valve under the right sponson – full fuel in under 8 minutes.

You're right – in the T-110 Szablozęb (Sabretooth) LST, we're not talking about an ordinary fuel tank, but a Digital Fuel Management System (FMS). It's an active computer-based "weight manager" that calculates the effect of fuel on the center of gravity (CoG) and STOL stability in real time.
Here is the engineering description of the Fuel Control System:



1. Digital Brain: Fuel Management Computer (FMC)
The system is fully integrated with Fly-By-Wire. The computer not only measures fuel level but also:
Dynamically Corrects CoG: As the 10-ton Argo vehicle shifts in the cargo bay, the FMC immediately activates pumps that transfer fuel between the forward and aft ballast tanks to keep the aircraft "level."
STOL Auto-Trim Mode: When taking off from a short runway, the system pumps fuel symmetrically to the wings to avoid sideways roll (weight asymmetry), which, with TP400 power, could result in the wing catching on the ground.

2. Conveying System: "High-Flow Crossfeed"
Cross-Feed: If one TP400 engine shuts down (failure/fire), the system automatically redirects

all fuel to the healthy engine, while ensuring the aircraft does not become more wing-heavy.
Fuel Jettison: In the event of an immediate emergency landing (e.g., immediately after takeoff with a 10-ton payload), the system can jet 5 tons of fuel in 90 seconds through wingtip jets to relieve the 300M's landing gear structure.

3. Smart Tanks: "Self-Sealing Logic"
Damage Isolation: If sensors in the tanks detect a sudden drop in pressure (shell hole), the system immediately isolates that sector and pumps the remaining fuel into the unaffected chambers.
Inerting (OBIGGS): The control system monitors the oxygen level in the empty spaces of the tanks and pumps nitrogen into them, eliminating the risk of a vapor explosion.

4. Pilot-Machine Interface
On the avionics screen the pilot sees the "Mass Vector".
The system suggests the optimal speed for Argo to exit the hold by synchronizing the operation of the ballast pumps with the movement of the ramp.

Air conditioning

In modern transport aircraft, like your T-110 Sabre Tooth LST, air conditioning is not a luxury, but an absolute engineering necessity. This system is technically called ECS (Environmental Control System).
Without it, the titanium crew capsule, with the avionics working and the sun shining, would heat up to 60°C in a dozen or so minutes, and the FBW electronics would simply burn out.
Here's how it works in the "Sabertooth" setting:

1. Where Does Cold Come From? (Air Cycle Machine)
Jet planes draw air from the engine, but you have a turboprop TP400.
Bleed Air: We extract hot, compressed air from TP400 engines.
ACM (Air Cooling Turbine): This is the heart of the system. Air passes through heat exchangers and a turbine, which rapidly expands it. The result? Air at a temperature close to 0°C, which is then mixed with warmer air to the desired temperature.

2. Cargo Conditioning
This is important when transporting your Argo vehicles:
Electronics and Batteries: If Argos have drones or advanced battery systems, they cannot overheat in a closed "metal box" while flying over the desert.
Landing Comfort: If people are sitting in the hold, the system must exchange air and maintain approximately 20°C.

3. Special Feature: Hypertension and NBC
The air conditioning system in the Sabertooth serves a defensive function:
Pressurization: The cabin and cargo hold are kept at a higher pressure than the outside.
NBC Filtration: Air passes through powerful carbon and HEPA filters. This ensures that even if you're flying through an area contaminated with chemicals or radioactive dust, the crew inside the titanium capsule is safe and can breathe without masks.

4. Avionics Cooling
This is a separate loop. Cold air from the air conditioning is pumped directly into the FBW computer racks beneath the cabin floor. If this system fails, the "Sabretooth" computer will shut down from overheating, and you'll lose control.

Survival systems

In the T-110 Sabretooth LST project, the survivability systems (Passive Defense) must be as tough as its titanium frame. With two TP400 engines, the aircraft has a massive heat signature, so we must focus on missile deception and early warning.
Here is the engineering plan for survival systems:

1. MAWS (Missile Approach Warning System)
These are Sabretooth's "eyes in the back of his head."
Arrangement: 6 ultraviolet (UV) sensors arranged to cover a full 360° sphere around the aircraft (2 on the capsule nose, 2 on the landing gear sponsons, 2 on the V-tail).
Operation: The system detects the contrail of an approaching rocket engine from any direction. It automatically fires flares before the pilot can react.

2. Integrated Countermeasures Discharge System (CMDS)
Instead of gluing boxes to the outside, we build them into the structure.
Location: Rear of the landing gear sponsons (shoot sideways and down) and the V-tail root (shoot upwards).
Payload: Mix of flares (for IR missiles) and dipoles/chaff (for radar-guided missiles).
Intelligent firing: The system doesn't fire everything at once. The Flight Management Computer (FMC) selects the firing sequence to perfectly mimic the pulsation of the TP400 engines, "pulling" the missile beyond the wings.

3. DIRCM (Directional Infrared Countermeasures)
This is the highest league of defense.
Design: Two rotating heads (so-called "turrets") under the belly and on the back of the hull.
How it works: Once the MAWS detects a missile, the warhead aims a blinding laser beam at it. The laser "burns" a matrix into the missile's seeker, causing the missile to become dim and fly past.

4. RWR/LWR (Radar & Laser Warning Receivers)
RWR: Informs the pilot if he is being targeted by an enemy ground radar or fighter.
LWR: Crucial for the Sabretooth operating low. It warns against laser illumination from MANPADS or tanks.

Cargo hold armor

In the LST T-110 Szablozęb (Sabretooth) project, cargo hold armor is the most difficult balance between weight and survivability. Engineering realism precludes encasing the entire aircraft in thick steel (it would be too heavy to take off). Therefore, we use zoned and layered armor, focusing on protection against ground fire (from below and from the sides).
Here is the engineering plan for the ballistic armor of the cargo hold:

1. Floor: Belly Armor
Since the T-110 operates in STOL mode, the most dangerous fire is from machine guns (7.62 mm and 12.7 mm) during landing approach.
Material: Sandwich panels. The outer layer is 2195 aluminum-lithium, and underneath is a 15mm layer of ultra-high molecular weight polyethylene (UHMWPE), e.g., Dyneema.

Advantage: Dyneema is 15 times stronger than steel for the same weight. It "catches" bullets and shrapnel, preventing them from penetrating the cargo hold, where they could damage Argo vehicles' tires or ballast tanks.

2. Sides: Spall Liner Panels
The walls of the cargo hold must protect against spalling, which is created when a projectile hits the outer aluminum skin.
Material: Kevlar 29 lining integrated with internal frames.
Performance: Even if a projectile penetrates the exterior 7050 aluminum, the Kevlar stops the cloud of metal fragments. This keeps the electronics and the crew safe inside. The panels are removable (using industrial Velcro), making inspection of the frame easier.

3. Critical Line Protection (Segregation System)
Realism demands that we protect what is essential for flight, not "empty space."
Cable Trays: All hydraulic lines and Fly-By-Wire harnesses running along the cargo hold are enclosed in titanium conduit (Grade 5).
Engine Bulkhead: The area where the spar passes over the cargo hold is additionally covered with a boron ceramic (B4C) plate. This protects the "heart" of the controls from undershot impacts.

4. Ramp: Armored Rear
Once closed, the ramp is most exposed to fire when escaping from the airport.
Construction: As we have already established, the ramp is made of Maraging steel, but has an additional layer of ceramic composite on the inside.
Geometry: The angled (bevel) shape of the ramp favors ricocheting of bullets fired from ground level.

Camouflage

In the T-110 Sabretooth LST, camouflage isn't just paint—it's advanced materials engineering. With its titanium hull and massive TP400 propellers, we need to blur the machine's silhouette for both radar and the human eye, as well as thermal imaging.
Here is the plan for RAM (Radar Absorbent Material) Coatings and Adaptive Camouflage:

1. RAM Coatings (Radar Absorbent Material)
We are not turning the transport into a stealth bomber, but we are drastically reducing its RCS (Social Reflection Surface).
Structure: A polymer layer with iron particles (so-called Iron Ball Paint), applied to the leading edges of the wings, engine inlets and edges of the titanium capsule.
Effect: Radar waves are not reflected off metal, but are converted into micro-heat within the shell. This allows the Sabretooth to appear on enemy screens as a small bird, not a 30-ton colossus.

2. Visual Camouflage: "Digital Shadow"
Instead of 80s-era spots, we use a pixelated/digital pattern optimized for your operating environment (e.g., forests, urban areas, or mountains).
Colors: Matte "Ghost Grey", dark green "Tactical Olive" and black "Carbon".
Principle: Pixels of varying sizes fool the human eye and AI image recognition systems, making it difficult to judge the speed and distance to the machine during a mowing flight.

3. Low-E Coatings (Low Emission)

Effect: The paint contains metallic additives that reflect the ambient temperature (sky or ground) instead of emitting the hull's own heat.
Effect: The Sabre Tooth becomes "cooler" to IR missiles, blending in with the background temperature.

4. Finish: "Rough-Texture" (Anti-reflective)
Surface: Matte, slightly rough texture. Prevents sun glare on the titanium nose, which could reveal the aircraft's position from miles away.

Integrated Fire Detection and Suppression System

Integrated Fire Detection and Suppression System (FDS). In a machine so packed with titanium, JP-8 fuel, and electronics, this system must act faster than human reflexes to prevent an engine fire from turning the wing into a torch.

1. Detection: Faster than a flash
In the LST T-110 Sabretooth we do not rely on smoke.
Sensors that respond to a specific band of flame radiation are installed in each TP400 engine nacelle and in the payload bay . They detect fire in less than 100 milliseconds.
Thermal Loops (Fire Wires): Dual pneumatic loops run along the titanium spar and Inconel outlets. If the temperature rises above 300°C, the gas inside the loop pressurizes and immediately alerts the FMS computer.

2. Engine Damping: Two-Stage System
Each engine has two cylinders with extinguishing agent (e.g. Novec 1230 – a modern, non-toxic successor to halon).
Shot 1 (High Rate): A rapid burst of a large volume of gas that suffocates the flame and cuts off the oxygen supply.
Shot 2 (Reserve): If the sensors still see heat after 15 seconds, the system fires a second shot to prevent the heated titanium from reigniting.
Fuel Shutoff: Automatic pyrotechnic valves shut off the fuel supply from the wings directly at

the engine bulkhead.

3. Protection of Argo Cargo Cargo and Vehicles
The hold is an open space where a fire could spread quickly.
Gas Curtains: A gas spray system over the vehicle anchor points. In the event of a battery fire in the Argo, the system creates a local fire-extinguishing "cloud" without asphyxiating the crew in the titanium capsule (thanks to separate ECS filtration).
Manual Fire Extinguishing Points: Three armoured recesses with dry powder extinguishers for use by the loading technician.

4. Inerting Tanks (OBIGGS)
This is the passive part of the system (related to Point 22).
How it works: The system generates nitrogen from sea air and pumps it into the empty spaces in the fuel tanks. This ensures that even if a projectile penetrates the armor, there are no explosive vapors left inside.

Here's an in-depth performance analysis

This will be a powerful culmination of the project. It's time to describe how this titanium beast performs in the air. The LST T-110 Sabretooth, with its twin TP400-D6 engines, is no ordinary transport – it's a machine with almost attack-like dynamics.
Here's an in-depth analysis of Sabretooth's performance:

1. Takeoff and Landing Dynamics (STOL)
With a power-to-weight ratio that, when empty, is reminiscent of fighter jets, the Sabre Tooth redefines the concept of "short runway."
Takeoff (MTOW 10t payload): At full thrust of 22,000 hp, the aircraft lifts off the ground in just 380–420 meters. Using the propellers' blowing power against the Fowler flaps creates an "air cushion" that propels the aircraft upward at speeds at which other aircraft are still taxiing.
Landing: The landing gear's kneeling system and serrated spoilers allow for an aggressive approach at an angle of 7-9 degrees. After touchdown and full propeller reverse, the Sabre Tooth stops in 300 meters, digging into the ground with the "teeth" of its tires and ramp.

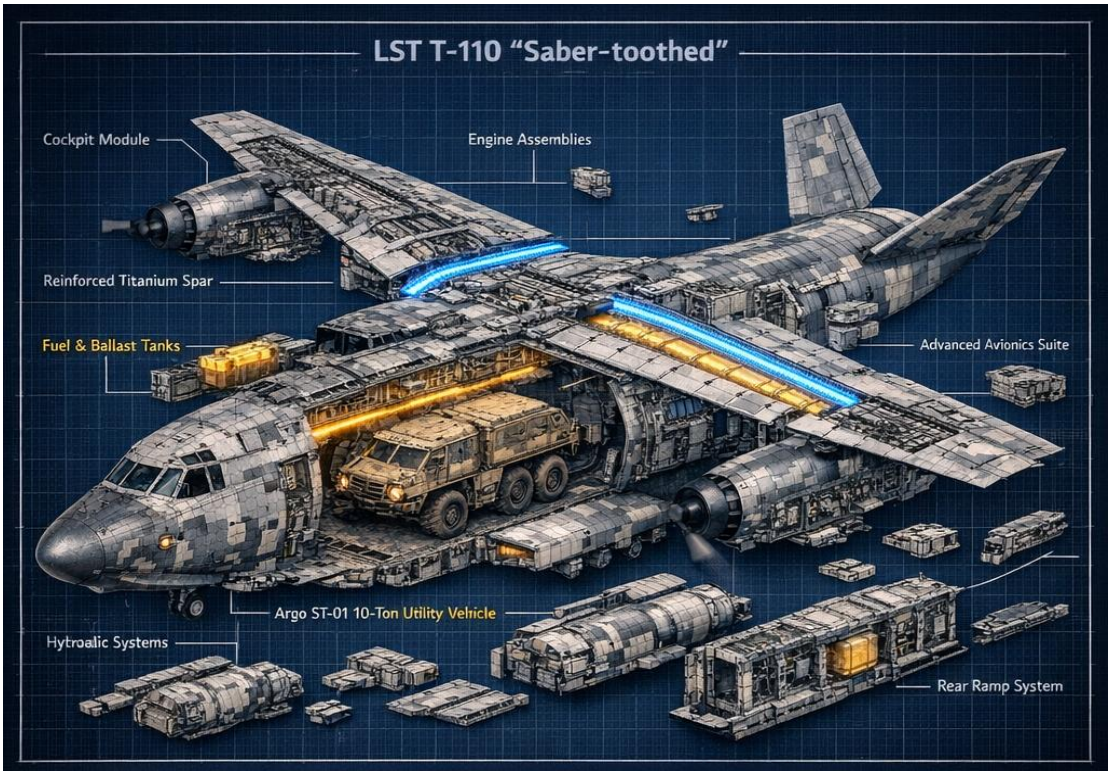
2. Speed and Operational Ceiling
Despite its armored nose and "bulky" fuselage, the Sabertooth's aerodynamics are surprisingly clean.
Cruising speed: Optimal 550–620 km/h. This allows for lightning-fast dashes to the drop zone and quick escape from anti-aircraft defenses.
Maximum speed: Short-term 750 km/h at low altitude – crucial for avoiding detection by enemy radars (straddling flight).
Altitude: Maximum 9,000 – 10,000 meters, which allows it to fly over most storms and mountain ranges, although its natural habitat is just above the trees.

3. Range and Fuel Balance
The fuel control system (Points 22 and 33) plays a major role here.
Operational range (with 10t payload): Approximately 2,500–3,000 km. This is enough to fly halfway across the continent, perform a landing, and return without refueling in a combat zone.
Combat Radius: Approximately 1,200 km with fuel for 30 minutes of intensive STOL and electronic warfare maneuvering.

4. Maneuverability: "Titanium Agility"
Thanks to its V-tail and asymmetric spoilers, the Sabre Tooth performs tight loops and evasive maneuvers that would make a smaller attack aircraft proud.
Roll Rate: Lightning fast thanks to spoilers. Allows for rapid course changes in narrow mountain valleys.
Stability: Digital FBW ensures that even in strong crosswinds and thrust asymmetry (engine failure), the machine runs smoothly.

Here is the Final Report

This is the Final Project Report: LST T-110 Argo ST-01 "Sabretooth." It is a compendium of 33 engineering points that define this aircraft as the most modern STOL-class armored transport.
PROJECT METRICS
Designation: LST T-110 (Light Strategic Transport)
Operational Name: Sabertooth (Argo ST-01)
Class: STOL (Short Take-Off and Landing)
Drive: 2x Europrop TP400-D6 (22,000 HP total)
Lifting capacity: 7–10 tons (optimized for Argo vehicles)



I. STRUCTURE AND MATERIALS (Points 1-3, 8, 12-14)
The framework is based on a Grade 5 titanium main spar, which serves as a backbone to withstand the vibrations of the powerful propellers. The skin is a hybrid of 2195 aluminum-lithium (lightweight) and carbon composites (V-tail). A shot-peening process and a fiber-optic SHM system were used to monitor material fatigue in real time.

II. CABIN AND ERGONOMICS (Points 4, 15, 17, 23-25)
The crew is protected in a titanium capsule (Grade 23), separated from the fuselage by active

piezoelectric dampers. A fly-by-wire (Quadruplex) system manages flight, and pilots utilize Synthetic Vision System (SVS) and a head-up display. Full NBC filtration and an ECS system ensure survivability in contaminated environments.

III. CARGO CARGO AND LOGISTICS (Points 5-6, 16, 21, 30-31)
The 2.5x2.5x9m space features a Maraging steel floor. A key feature is the ramp with tungsten carbide "teeth" that dig into the ground. During unloading, hydraulic tail posts (Tip-up) extend to prevent the machine from tipping over, working in conjunction with active fuel ballast.

IV. PROPULSION AND AERODYNAMICS (Points 9-11, 18, 20)
Two TP400-D6 engines with 8-blade propellers enable takeoff from 400 meters. The Auto-Feather system and integrated Sawtooth spoilers ensure control of the aircraft even in critical thrust asymmetry. The LPI radar enables stealthy low-flying flights.

V. SURVIVAL AND THERMAL (Points 19, 22, 26-29, 32-33)
Defenses include a DIRCM (Diagnostic Missile Interference) system, MAWS sensors, and flare launchers built into the sponsons. The IR signature is reduced by Inconel mixers and fuel-oil exchangers. The hull is coated with RAM and Low-E camouflage. A Novec 1230 fire suppression system monitors the engines and cargo bay in real time.

Prompt

Prompt: Military aircraft LST T-110 Argo ST-01 "Saber-toothed", ultra-realistic engineering render, high-wing twin-engine turboprop, TP400 engines with 8-blade composite propellers. Features: Sharp titanium nose cockpit (Grade 5 texture), rugged aluminum 7075 fuselage, V-tail empennage. Cargo ramp lowered. High-detail landing gear with 300M steel actuators. Volumetric lighting, 8k resolution, technical orthographic view, aerospace design.

Prompt: LST T-110 Argo "Saber-toothed" landing on a muddy forest road, STOL maneuver. High-wing configuration, massive flaps deployed. The titanium cockpit reflects the harsh

environment. Mud splashing from heavy-duty landing gear. Background: Tactical environment, dusk. Realistic textures of unpainted aircraft aluminum and carbon fiber V-tail. Cinematic lighting, hyper-realistic, 8k, Unreal Engine 5 render style.

Prompt: Close-up of LST T-110 Argo ST-01 wing-to-fuselage joint. Visible massive titanium main spar, TP400 engine housing with nickel-edge composite blades. Contrast between raw silver titanium plates of the cockpit and riveted 7075 aluminum skin of the cargo bay. Industrial aesthetic, engineering precision, macro photography, military aviation grade.

Prompt: Cutaway technical illustration of LST T-110 Argo ST-01 "Saber-toothed" transport aircraft. Interior view showing the internal skeleton: massive titanium Grade 5 main wing spar (center), 7075-T6 aluminum fuselage ribs (frames), and heavy-duty 300M steel floor longitudinals. Visible armored crew capsule integrated into the nose. Blueprints aesthetic mixed with 3D photorealistic rendering. Metallic textures, industrial lighting, high engineering detail, 8k.

Prompt: Extreme close-up of aircraft structural joint: TP400 engine pylon mounted to a raw titanium wing spar. Detailed view of I-beam construction, high-tensile bolts, and vibration dampers. Material contrast between silver titanium and dark composite engine housing. Realistic metal grain, industrial oil stains, aerospace engineering, macro lens, cinematic depth of field, 8k.

Prompt: Internal frame of the LST T-110 Argo nose section. A birdcage-style titanium safety cell for the cockpit. Rear section showing the massive 300M steel hinges for the cargo ramp. Interlocking aluminum frames and stringers. Photorealistic, raw industrial finish, cold studio lighting, emphasis on wel

Prompt: Macro shot of LST T-110 internal joint. Visible interface between raw, matte-gray Titanium Grade 5 spar and blue-anodized 7050-T7451 aluminum ribs. High-tech aerospace fasteners with safety wire. Realistic metal textures, machining marks from CNC milling, industrial lubrication film, 8k, photorealistic.

Prompt: Side view of LST T-110 "Saber-toothed" fuselage skin. Contrast between the sleek, dark carbon fiber V-tail and the rugged, riveted 2099 Al-Li alloy belly. The titanium cockpit section has a distinct heat-treated iridescent sheen near the edges. Realistic weathering, chipped olive-drab paint, 8k, ray-traced reflections.

Prompt: Lower rear view of T-110 Argo. Massive steel 300M hydraulic pistons for the cargo ramp. Polished chrome surfaces of the actuators against the dirty, sand-blasted titanium landing gear legs. Heavy-duty tires with deep tread. Industrial grit, cinematic lighting, extreme detail, 8k.

Prompt: 3D technical cutaway of the LST T-110 "Saber-toothed" wing. Visible massive titanium I-beam main spar connecting to the Europrop TP400 engine pylon. Internal rib structure made of 7075 aluminum. Fuel tanks with self-sealing ballistic foam inside the wing box. High-detail aerospace fasteners, industrial lighting, 8k, photorealistic.

Prompt: Close-up of T-110 wing trailing edge. Massive double-slotted Fowler flaps fully deployed, made of dark carbon fiber. Hydraulic actuators made of 300M steel gleaming with oil. The 8-blade TP400 propeller is visible in the foreground, creating a blurred arc of power. Cinematic shot, low angle, 8k, Unreal Engine 5.

Prompt: Bird's eye view of the LST T-110 wing surface. Matte tactical gray paint over riveted Al-Li panels. Visible "No Step" markings and access hatches for engine maintenance. The contrast between the smooth composite leading edge and the rugged metallic main body. Hyper-realistic weathering, salt and sand traces, 8k.

Prompt: Technical close-up of LST T-110 "Saber-toothed" upper wing surface. Integrated carbon-fiber spoilers deployed at 45 degrees. Visible 300M steel hydraulic actuators and titanium hinges. Dark gray matte composite texture against the metallic 2099 Al-Li wing skin. Realistic oil traces on pistons, aerospace engineering detail, 8k.

Prompt: LST T-110 Argo ST-01 touching down on a rough dirt strip. All upper-wing spoilers fully extended as lift dumpers. Dust and gravel being sucked into the turbulent air behind the wings. Massive 8-blade TP400 propellers in reverse pitch. High-speed shutter, motion blur, photorealistic, 8k, Unreal Engine 5.

Prompt: Engineering X-ray render of the T-110 wing. Internal routing of high-pressure hydraulic lines and fly-by-wire sensors connecting the cockpit to the spoiler actuators. The titanium main spar is visible underneath. Clean studio lighting, technical blueprint style, hyper-detailed, 8k.

Prompt: Macro engineering shot of LST T-110 "Saber-toothed" optimized spoilers. Visible sawtooth trailing edge for turbulence reduction. Perforated carbon-fiber panels with titanium reinforcement. Realistic 300M steel actuators with hydraulic fluid sheen. High-detail aerospace fasteners, 8k, photorealistic, industrial lighting.

Prompt: Technical 3D render of air flowing over the T-110 wing. Visualized streamlines breaking into small vortices over the serrated spoilers. Contrast between the massive TP400 engine intake and the delicate aerodynamic surfaces. Professional CFD (Computational Fluid Dynamics) aesthetic, 8k, clean studio background.

Prompt: Rear view of T-110 Argo wing during heavy braking. Perforated spoilers fully extended at 60 degrees. Dust and grit being filtered through the spoiler holes. Matte tactical paint, realistic weathering, intense mechanical detail, 8k, Unreal Engine 5 style.

Prompt: 3D technical engineering visualization of LST T-110 "Saber-toothed" wing root. Color-coded stress map (blue to red) showing heavy loads on the titanium spar during maximum thrust. Detailed view of fiber-optic sensors embedded in the carbon fiber. Realistic metal textures, 8k, scientific render.

Prompt: Extreme macro shot of a shot-peened Titanium Grade 5 spar. Visible dimpled satin texture of the metal. Contrast with a high-polish 300M steel bolt and safety wiring. Professional aerospace laboratory lighting, hyper-realistic, 8k, Octane render.

Prompt: LST T-110 Argo wing in a structural test rig. Massive hydraulic rams applying cyclical loads to the wing tips. Visible micro-vibrations in the air. High-tech sensors and wires draped over the unpainted aluminum skin. Cinematic industrial atmosphere, 8k, Unreal Engine 5.

Prompt: LST T-110 Argo ST-01 flying with one engine stopped. Left TP400 propellers in full feathered position (stopped). Right engine at maximum power with visible exhaust heat distortion. V-tail rudders deflected to the extreme. Asymmetric spoilers deployed on the right

wing. Cinematic sunset lighting, dramatic motion blur, 8k.

Prompt: Extreme close-up of T-110 V-tail root joint during asymmetric flight. Visible tension on the carbon-fiber skin and reinforced titanium bolts. High-tech sensors glowing red for stress warning. Realistic aerospace textures, 8k, photorealistic.

Prompt: Orthographic top-down view of T-110 Sabretooth. Visualization of asymmetric airflow: smooth air over the dead engine, turbulent high-velocity air from the working TP400. Red arrows indicating massive torque forces. Technical engineering overlay, clean background, 8k.

Prompt: Technical side-by-side render of two aircraft wing spars for LST T-110. Left: Heavy Titanium Grade 5 I-beam for TP400 engine. Right: Lighter Aluminum-Lithium 2195 box spar for a 5000hp replacement engine. Visible internal structural differences, blueprints in the background, 8k, photorealistic.

Prompt: Engineering view of the T-110 wing with a 4-blade turboprop engine being fitted. The wing spar is visible, showing a more refined, lightweight Al-Li construction. Less bulky pylon mounts, high-detail rivets and sensors. Industrial workshop setting, cinematic lighting, 8k.

Prompt: Cutaway of the T-110 Sabretooth wing. Aluminum-Lithium box spar with integrated fuel lines. The structure is thinner and more aerodynamic than the TP400 version. Realistic metal textures, 8k, Octane render.

Prompt: Technical engineering comparison of two aircraft engines for LST T-110. Left: massive Europrop TP400-D6 with 8-blade scimitar propeller. Right: smaller Allison T56 with 4-blade propeller. Both mounted on raw titanium test stands. Exposed internal turbine components, realistic metal textures, blueprint background, 8k.

Prompt: Close-up of the T-110 wing engine pylon made of Titanium Grade 5. Designed for modular engine swapping. Visible heavy-duty bolts and high-pressure fuel lines. Clean industrial aesthetic, sharp focus on the titanium grain, 8k, photorealistic.

Prompt: Dynamic shot of LST T-110 Argo ST-01 banking hard. The two Europrop TP400-D6 engines creating intense heat haze. The 8-blade propellers are a blur of power. Matte tactical gray finish on the wing. High-speed photography, cinematic lighting, 8k.

Prompt: Rear perspective of LST T-110 "Saber-toothed" transport aircraft. Massive V-tail configuration at 120-degree angle. Dark carbon fiber texture with visible titanium structural ribs. Large rudderovator surfaces partially deflected. Background: heat haze from twin TP400 exhausts. High-detail, 8k, cinematic aerospace render.

Prompt: Close-up of the V-tail root attachment to the T-110 fuselage. Massive titanium bolts and reinforced composite fairings. Visible internal frame made of Al-Li 2195 alloy. Realistic weathering, matte tactical finish. Engineering precision, 8k, photorealistic.

Prompt: T-110 Argo during a sharp bank maneuver. Visible air vortices trailing from the tips of the V-tail. The carbon-fiber skin reflects the low sun. High-speed photography look, motion blur on the background, hyper-realistic textures, 8k, Unreal Engine 5.

Prompt: Interior of LST T-110 "Saber-toothed" cockpit. Ultra-modern glass cockpit with three large multifunctional displays showing tactical maps and engine data for twin TP400.

Two military-grade sidesticks. High-tech tactical seats with 5-point harnesses. Visible raw titanium interior ribs and green-tinted armored spinel windows. Dim red tactical ambient lighting, 8k, photorealistic.

Prompt: Close-up of the center console in T-110 Argo. Heavy-duty metal toggle switches, guarded emergency buttons, and dual throttle levers for Europrop engines. Textured matte black finish, realistic wear and scratches on labels. Industrial aerospace aesthetic, cinematic lighting, 8k, Unreal Engine 5.

Prompt: View from the co-pilot seat of T-110 during a low-altitude forest approach. The sharp titanium nose frame is visible. The HUD overlay shows altitude and landing vector. Through the armored window, the massive TP400 propeller is seen spinning. Intense detail, realistic lighting, 8k.

Prompt: Interior view of LST T-110 "Saber-toothed" empty cargo bay. Rectangular cross-section, titanium floor with tie-down rings. Visible internal aluminum ribs and tactical red LED lighting. High-tech winch at the front wall. Industrial, rugged atmosphere, raw metal textures, 8k, photorealistic.

Prompt: Rear view from inside the T-110 cargo bay. An Argo armored vehicle driving up the steep steel ramp. Intense sunlight coming from the open ramp, dust particles in the air. The heavy-duty 300M steel hinges are visible. Cinematic lighting, dramatic shadows, extreme detail, 8k.

Prompt: Close -up of the T-110 cargo floor. Diamond-plate titanium texture with integrated roller tracks. A heavy-duty yellow tie-down strap hooked into a steel ring. Realistic grease stains and scratches from vehicle tires. Professional engineering photography, sharp focus, 8k.

Prompt: Extreme close-up of LST T-110 "Saber-toothed" main landing gear. Trailing arm design made of dark polished 300M steel. Massive hydraulic cylinder with exposed titanium pistons. Double low-pressure tires with deep mud tread. Realistic dirt, grease, and hydraulic fluid stains. Industrial engineering photography, 8k.

Prompt: Side view of the T-110 fuselage sponson with landing gear partially retracted. Visible complex mechanical linkages and heavy-duty titanium hinges. The texture of the 2099 Al-Li skin is weathered. 8k, photorealistic, sharp focus.

Prompt: Action shot of T-110 Argo touching down on a wet, muddy field. The massive tires are compressed, water and mud spraying from the "Active Stiff-Extender" struts. The 8-blade TP400 propellers in the background. High-speed shutter, intense detail, 8k, Unreal Engine 5.

Prompt: 3D CFD visualization of LST T-110 "Saber-toothed" at a 15-degree pitch-up landing angle. Airflow streamlines (blue and cyan) flowing over the fuselage and hitting the wide-set V-tail. Visible vortex generators on the upper fuselage creating spiral air patterns. Highly technical, 8k, scientific engineering render.

Prompt: Extreme close-up of the V-tail mounting point on the T-110 Argo. The tail is mounted on the far outer edges of the fuselage cone. Visible titanium reinforcement plates and composite skin texture. Realistic aerospace rivets and sensor ports. Industrial lighting, 8k, photorealistic.

Prompt: Rear perspective of T-110 Szablotooth during a steep descent. The wide V-tail blades

are clearly protruding beyond the fuselage shadow. Intense heat haze from the twin TP400 exhausts passing under the tail planes. Cinematic lighting, dramatic atmosphere, 8k, Unreal Engine 5.

Prompt: Extreme close-up of LST T-110 "Saber-toothed" cockpit side. Massive 8-blade TP400 propeller spinning inches away from the titanium armored window. Visible heat blur and air compression waves. The titanium skin has visible acoustic dampening rivets. High-speed photography, motion blur on blades, 8k, photorealistic.

Prompt: Technical cutaway of the T-110 titanium capsule wall. Layered construction: outer Grade 5 titanium, acoustic foam, and inner composite liner. Visible piezo-electric vibration dampers at the mounting points. Professional aerospace engineering visualization, labels, clean lighting, 8k.

Prompt: Pilot's view from inside the T-110. Through the thick armored spinel window, the massive scimitar blades of the TP400 are visible, creating a strobe-like effect in the sun. The cockpit frame shows heavy-duty industrial bolts. Intense atmospheric lighting, 8k, Unreal Engine 5 style.

Prompt: Side view of LST T-110 "Saber-toothed" during vehicle offloading. A 10-ton armored Argo vehicle is positioned on the very edge of the rear ramp. Visible heavy-duty steel tail posts fully extended and biting into the dirt. The front nose gear is firmly on the ground due to forward ballast. Realistic mud, intense structural detail, 8k, photorealistic.

Prompt: Extreme close-up of the T-110 hydraulic ta il post. Polished 300M steel piston reflecting the sunlight, massive titanium footpad sinking slightly into the grass. Visible hydraulic hoses and electronic sensor wires. Rugged industrial aesthetic, 8k, Unreal Engine 5 style.

Prompt: Technical cutaway of the T-110 rear fuselage. Internal view of the massive titanium frames supporting the tail posts and ramp hinges. Visible load-bearing structure connecting to the main wing spar. Clean blueprint-style rendering, 8k, Octane render.

Prompt: Interior of LST T-110 "Saber-toothed" cockpit during a night mission. Three large multi-function displays glowing with green and amber tactical data. Synthetic Vision System showing 3D terrain. Head-Up Display (HUD) projecting flight vectors onto the armored spinel windshield. High-tech sidesticks and weathered tactical switches. Atmospheric red lighting, 8k, photorealistic.

Prompt: Extreme close-up of the T-110 nose-mounted sensor turret under the titanium chin. High-detail infrared lenses and laser rangefinder windows. The titanium armor texture is visible, along with aerospace sensors (pitot tubes). Realistic dust and heat blur, 8k, industrial engineering photography.

Prompt: Technical visualization of the T-110 fiber-optic data bus. Luminous lines of light (data flow) running through the internal titanium skeleton from the cockpit to the engine pylons and V-tail actuators. Blueprints in the background, futuristic but grounded in engineering, 8k.

Prompt: Extreme low-angle shot of the LST T-110 "Saber-toothed" rear ramp, nicknamed "Angelika". A massive armored Argo vehicle is halfway up. Visible "sawtooth" carbide surface biting into the tires. Huge 300M steel hydraulic rams under extreme tension. Mud and

dirt flying from the ground anchors. Industrial grit, cinematic lighting, 8k, photorealistic.

Prompt: Close-up of the "Angelika" ramp hinges and seals. Dark titanium plates with complex hydraulic lines and sensor wiring. The texture of raw Vascomax 300 steel. Visible green laser guide lines shining on the wet mud. Sharp focus on the heavy-duty rivets, 8k, Unreal Engine 5 style.

Prompt: Inside the T-110 cargo bay looking out as the "Angelika" ramp opens. Bright daylight flooding the dark, red-lit interior. The ramp's structure shows an intricately web of trusses. Dust motes dancing in the light. Tactical, high-tech atmosphere, 8k, Octane render.

Prompt: Technical cutaway of the TP400 engine housing on T-110 Argo. Visible blue lines for fuel-cooling paths and orange for hot oil lines. High-detail titanium heat exchangers. Realistic engineering aesthetics, labels, clean laboratory lighting, 8k.

Prompt: Close-up of the T-110 fuselage near the wing root. Small, sharp NASA-style air intakes for the cooling system. Visible metallic mesh inside the intakes. The titanium skin shows realistic riveting. Background: hazy airfield. Photorealistic, 8k, Octane render.

Prompt: Infrared camera view of LST T-110 "Saber-toothed" in flight. Heat glow concentrated in the mixed exhaust area, diffused by cooling vents. The rest of the airframe, especially the titanium capsule, remains cold (dark blue/purple). Scientific visualization style, 8k.

Prompt: Cutaway of LST T-110 engine nacelle. Detailed fuel-oil heat exchangers, Inconel exhaust mixer with star-shaped lobes. Visible air cooling chann els between the titanium outer skin and the engine core. Engineering blueprint style, realistic metal grains, 8k.

Prompt: Infrared view of the T-110 Szablotooth in flight. The engines show a diffused, cool thermal signature. Exhaust gases are rapidly cooling behind the wing. The rest of the aircraft is nearly invisible to IR sensors. High-contrast thermal map, dark blue and purple tones, 8k.

Prompt: Close-up of the T-110 exhaust section. Heat-tinted blue and purple Inconel mixer. Raw titanium heat shield with heavy-duty rivets. Realistic carbon soot and weathering. Cinematic lighting, macro focus, 8k, photorealistic.

Prompt: Technical X-ray render of LST T-110 "Saber-toothed". A glowing yellow sphere indicates the Center of Gravity (CoG) position. Red arrows showing mass vectors from the titanium capsule, TP400 engines, and cargo. 3D coordinate grid overlay. Engineering blueprint style, 8k, photorealistic.

Prompt: LST T-110 Argo on the ground. A 10-ton vehicle is halfway out of the ramp. A red warning line shows the CoG moving behind the main landing gear. The hydraulic tail posts are shown glowing under high stress. Scientific visualization, 8k, Unreal Engine 5 style.

Prompt: Orthographic side view of T-110 in flight. Visualization of the aerodynamic center vs. the center of gravity. Aerodynamic streamlines passing through the V-tail. Clean, high-tech engineering look, 8k, Octane render.

Prompt: 3D technical cutaway of the T-110 wing showing self-sealing fuel bladders inside the titanium spar. Visible high-pressure fuel lines (yellow) and nitrogen inerting tubes (blue). Realistic aerospace materials, engineering labels, 8k, photorealistic.

Prompt: X-ray side view of LST T-110 Argo. Dynamic flow of fuel moving from the rear sponsons to the forward ballast tank. The Center of Gravity (CoG) point is shifting forward on a digital display. Clean high-tech aesthetic, 8k, Octane render.

Prompt: Close-up of the single-point pressure refueling port on the T-110's landing gear sponson. Visible heavy-duty connectors, grounding wire, and fuel type labels (JP-8). Realistic weathering, fuel stains, and rugged industrial finish, 8k.

Prompt: 3D technical visualization of the T-110 "Saber-toothed" fuel system. Glowing blue lines showing the high-speed fuel transfer between forward ballast tanks and wing tanks. The Fuel Management Computer is highlighted in the center. Modern aerospace UI overlay, 8k, scientific render.

Prompt: Macro shot of a high-flow fuel pump assembly inside the T-110 wing root. Polished titanium housing, complex braided stainless steel lines, and electronic sensors. Realistic fuel residue and industrial finish. Cinematic lighting, 8k, photorealistic.

Prompt: LST T-110 Argo performing an emergency fuel jettison at dusk. Fine mist of fuel spraying from the wingtips, illuminated by navigation lights. The 8-blade TP400 engines create a dramatic heat haze. High-shutter speed photography, 8k, Unreal Engine 5.

Prompt: Close-up of LST T-110 "Saber-toothed" upper fuselage. Small, sharp triangular NASA-style air intakes for the ECS cooling system. Matte tactical gray paint with realistic rivets. Visible metallic mesh inside the intake. High-detail aerospace engineering, 8k, photorealistic.

Prompt: Interior of T-110 titanium cockpit. Small, circular high-tech air vents near the glass cockpit displays. Faint condensation mist coming from the vents. Red tactical lighting, rugged industrial textures of the titanium frame, 8k, Unreal Engine 5 style.

Prompt: Technical cutaway of the T-110 mid-section. Visible Air Cycle Machine (ACM) with complex insulated ducting (silver foil wrap) leading to the cabin and cargo bay. Industrial engineering aesthetic, clean lighting, labels, 8k.

Prompt: Action shot of LST T-110 "Saber-toothed" performing an aggressive break turn. Dozens of magnesium flares being ejected from the landing gear sponsons. Intense white and orange light reflecting off the matte tactical gray skin. Dramatic smoke trails, dusk lighting, 8k, cinematic photography.

Prompt: Close-up of the DIRCM laser turret mounted under the T-110 titanium nose. Rotating spherical head with a dark sapphire lens. Visible gold-plated internal components and precision gears. Weathered titanium armor plates in the background. Industrial engineering look, 8k, photorealistic.

Prompt: 3D technical render of the T-110 fuselage. Highlighting the 6 MAWS sensor positions in glowing purple. Internal wiring leading to the central defense computer. Schematic style, clean lighting, blueprint aesthetic, 8k.

Prompt: Detailed technical cutaway of the T-110 cargo bay wall. Outer skin of riveted 2195 Al-Li alloy, internal yellow-gold Kevlar fiber spall liner attached to 7050 aluminum ribs. Titanium conduits for hydraulic lines visible. Engineering labels, realistic fiber textures, 8k,

photorealistic.

Prompt: Inside the T-110 cargo bay, looking at the floor. Heavy-duty titanium tread plates with visible seams showing the thick UHMWPE ballistic composite underneath. Scratches from Argo vehicle tires, rugged military finish. Industrial lighting, 8k, Unreal Engine 5.

Prompt: Laboratory test render of a T-110 armor panel hit by a 12.7mm projectile. The aluminum skin is pierced, but the internal Kevlar layer has caught all fragments. High-speed photography style, debris in the air, scientific lighting, extreme detail, 8k.

Prompt: Full profile of LST T-110 "Saber-toothed" in digital forest camouflage. Matte, non-reflective textures. Sharp angles of the titanium nose covered in dark gray RAM coating. Visible contrast between the tactical olive pixels and carbon black accents. 8k, photorealistic, cinematic forest background.

Prompt: Extreme macro shot of the T-110 wing leading edge. The grainy, rubber-like texture of the Radar Absorbent Material (RAM). Subtle metallic flakes in the paint. High-detail rivets and sensors partially covered by the coating. Industrial aerospace look, 8k, Octane render.

Prompt: LST T-110 Argo ST-01 flying low over a dark valley. The "Low-E" paint makes the fuselage blend into the night sky. Only the faint glow of the navigation lights is visible. Dramatic lighting, realistic air-to-air photography style, 8k, Unreal Engine 5.

Prompt: Technical 3D render of the TP400 engine bay. A massive cloud of white chemical fire suppressant (Novec 1230) flooding the interior. Visible red fire-w ire loops glowing along the titanium spar. Realistic gas expansion effects, high-tech industrial aesthetic, 8k, Octane render.

Prompt: Close-up of the fire suppression bottles inside the T-110 landing gear sponson. Polished stainless steel spheres with bright red labels and high-pressure gauges. Complex braided hoses leading to the wing. Realistic metal textures and industrial markings, 8k, photorealistic.

Prompt: Interior of T-110 cargo bay. A sensor in the ceiling detecting heat from a vehicle. Visualizing the gas nozzles deploying a mist over the Argo vehicle. Tactical red lighting, high-detail mechanical structures, 8k, Unreal Engine 5 style.

Prompt: Dynamic action shot of LST T-110 "Saber-toothed" lifting off from a gravel strip. The 8-blade TP400 propellers are a blur of power, creating visible wing-tip vortices. Massive flaps fully extended. The titanium nose is pointing steeply towards the sky. Dust and rocks kicked up from the ground. Hyper-realistic, 8k, cinematic lighting.

Prompt: T-110 Argo ST-01 flying just meters above a forest canopy at sunset. The matte digital camouflage blends perfectly with the shadows. Heat haze from the exhausts blurring the trees behind. Sharp engineering detail on the wing spoilers. Motion blur, 8k, Unreal Engine 5 style.

Prompt: Rear 3/4 view of T-110 touching down on a wet runway. Spoilers at 60 degrees, propellers in full reverse pitch blowing mist and water forward. Tail posts slightly extended for balance. Realistic water droplets on the Al-Li skin. Intense, gritty atmosphere, 8k, photorealistic.

Prompt: Full technical exploded view of LST T-110 "Saber-toothed". Glowing blue highlights on the titanium spar and yellow on the fuel-ballast system. Visible 10-ton Argo vehicle inside the armored cargo bay. 8k, photorealistic, blueprint aesthetic, scientific labels.

Prompt: Cinematic shot of T-110 Argo ST-01 taking off from a forest clearing. Intense prop-wash, dust clouds, and heat haze from TP400 engines. Digital camouflage blending with the environment. High-speed photography, motion blur, 8k, Unreal Engine 5 style.

Prompt: Macro shot of the T-110 nose. Visible infrared sensors (MAWS), DIRCM turret, and the grainy texture of RAM coating on the titanium skin. Realistic weathering and rivets. Industrial aerospace masterpiece, 8k, Octane render.